A Community-based Investigation of Cheating in Online Multiplayer Games

Selina Cho

New College
University of Oxford

A thesis submitted for the degree of

Doctor of Philosophy

Trinity 2023

Acknowledgements

This thesis would not have been possible without the support and encouragement of the wonderful individuals I met along the way.

I am immensely thankful to Ivan Flechais and Jonathan Lusthaus for their continuous support throughout my research journey. Thank you for your guidance and for always being there whenever I needed direction.

I would like to express my sincere gratitude to Paul Cairns and Max Van Kleek for generously dedicating their time to review this thesis and for providing invaluable feedback. I would also like to thank Vili Lehdonvirta and Helena Webb for their thoughtful comments and suggestions during the early stages of this research. I extend my thanks to the anonymous peer reviewers who provided their valuable feedback on my papers.

I would like to thank all the participants in my research studies for contributing their valuable time and sharing their experiences central to this research. I also want to express my sincere thanks to the Prevent team of the NCCU for providing their insights during the initial stages of this research. During my early years at Oxford, I had the opportunity to work with Joss, Jass, Sadie, Julia, and Arianna. Their approach to research broadened my perspective on the wide-reaching nature of cyber security, and I am grateful for the opportunity to have collaborated with them.

I would like to express my sincere appreciation to Janet, Katherine, David, Maureen, and Andrew for overseeing the CDT programme I was part of. I am grateful to you for providing support over the years, especially during the periods of uncertainty that came with COVID-19. I am thankful to my college advisor Victor for his support during my years at Oxford. I am also thankful to the staffs at New College for providing the facilities and opportunities that supported my research.

Before my doctorate programme, I was fortunate enough to cross paths with great academics who have steered me onto my current journey. I would like to express my heartfelt appreciation to Professor Shomu Banerjee and Professor Chris Mitchell for supporting my academic pursuits. You made me feel welcome on this journey of growth and knowledge in higher education, and I am honoured to have been your student. I would like to thank Rev. Professor Thomas Flynn who inspired me to remain a lifelong learner, within and beyond lecture halls. Your teaching sparked the philosophical interests and ways of thinking that shape my outlook on social science

research today. I am grateful to Mr. Simon Ayling for the lasting impact made on my journey of learning. I feel fortunate to have had such a mentor whose guidance continued to resonate with me even through my years of doctorate research.

My research journey would not have been the same without the support of my friends. I would like to thank Konrad, Qiaoyu, Klaudia, Laura, Jack Jackson, MJ, Milad, Harry, and Sid for the memorable moments at Oxford, from thoughtful research ideas to great times outside of work. I enjoyed being a part of the CDT programme surrounded by clever and enthusiastic individuals who made my time as a researcher truly welcoming from day one. I thank everyone involved for creating such unforgettable memories. I would also like to thank Minjung, Elsa, Andrew, Amelie, Tanya, Amira, and Marina for their support and enduring friendship even from a distance. It has been a delight to live through the varied directions our professional and personal journeys have taken.

I would like to thank Helen, who was always there to lend a listening ear and provide words of encouragement. You understood the challenges we faced as researchers, and I appreciated being able to share those moments with you.

I owe a heartfelt thank you to my father, who has shown unwavering love and support throughout my doctorate journey, and to my sister as well. I am also deeply grateful to my mother, who always wished the very best for me.

I thank Carl for his support and patience throughout my research journey. I am always grateful for your openness to new ideas and putting up with my endless questions about the world. I am also grateful to you for looking out for my safety, without which I may not even have been here writing this thesis today. Sharing these experiences with you has meant everything to me. I cannot wait to discover what lies ahead for us and to continue building our future together.

Lastly, I would like to thank my dear auntie Aran. Your words of wisdom and guidance have been a constant source of motivation throughout my life. Thank you for always believing in me.

Abstract

While the negative impacts of game cheating are widely acknowledged, it is easy to overlook a bigger picture including its more nuanced characteristics. Over recent decades, the phenomenon of cheating has evolved from isolated acts by individuals to vast, thriving communities operating on numerous platforms. These communities remain underrepresented in academic research, which lacks a unified framework. Beyond the traditional boundaries of gaming, the study of cheating communities presents industry and law enforcement with valuable information on socio-cultural dynamics intersecting with technological adoption, and areas for intervention.

To construct a baseline of understanding, this thesis explores in depth the social practices and supporting structures of a community centred around game cheating. We ask the following research question: *How are game cheating communities established, reinforced, and governed?* Using semi-structured interviews (n=88) with players and experts familiar with cheating communities, the thesis applies abductive reasoning to determine emergent concepts.

First, we illustrate how social dynamics emerge within games among cheaters, including cooperation, support/camaraderie, and conflict. Second, we uncover participatory activities within cheating communities, spanning a wide spectrum of legality and playfulness, and identify platforms that offer a safe environment to augment the cheating experience. Third, we delve into cheating community power dynamics and elements that foster peer relationships and newcomer integration, drawing attention to prevalent gatekeeping and toxic behaviours. Finally, we provide a unified conceptual framework for understanding cheating across various types of collectives, from peer groups to multi-interest communities. Three areas are identified that warrant further attention: The prevalence of unrestrained toxic behaviours, the lack of moral grounding within the communities, and supporting roles in cheating (including cheat developers and sellers). The framework also incorporates feedback from experts across multiple industries to assess its applicability in guiding future interventions.

Drawing from these insights, this research serves to demonstrate the layers of complexity surrounding cheating in games, pushing beyond treatment as mere violations of rules. We close with a call for coordinated efforts across social media platforms, game providers, and law enforcement agencies to address the observed areas of concern more effectively.

Contents

List of Figures

List of Tables

Acronyms

ADL Anti-Defamation League.

CS:GO Counter-Strike: Global Offensive.

CSCW Computer-supported cooperative work.

DDoS Distributed denial of service.

DSA Digital Services Act.

FPA Fair Play Alliance.

FPS First-person shooter.

GTA V Grand Theft Auto V.

HCI Human-computer interaction.

HvH Hack versus Hack.

MDA Mechanics, Dynamics, and Aesthetics.

MICs Multi-interest communities.

MMORPG Massive multiplayer online role-playing game.

MOBA Multiplayer online battle arena.

NCA National Crime Agency.

NGOs Non-profit organisations.

P2P Peer-to-peer.

PUBG PlayerUnknown's Battlegrounds.

PX Player experience.

PXI Player Experience Inventory.

RAT Remote access trojan.

RPG Role-playing game.

RTS Real time strategy.

SLR Systematic literature review.

VAC Valve Anti-Cheat.

VPN Virtual private network.

WoW World of Warcraft.

Glossary

anti-cheating Measures to prevent or detect cheating behaviours within games.

crackers Users who inspect and analyse cheat software.

crash In *GTA V*, hackers can crash lobbies by bypassing the technical protection measures put in place by players. They can disrupt other players' game sessions, wipe their progress, and corrupt player accounts.

legit cheating A style of cheating that makes players appear as if they are not cheating.

lobbies In *GTA V*, public lobbies are game sessions that allow players to join and participate in the open world. In contrast, private lobbies offer a more controlled environment, enabling players to play exclusively with trusted allies.

mod The term *mod* is an abbreviation for game modification. Mods are user-created alterations to video games that can involve changes to in-game mechanics and assets. It is also an abbreviation for *modder*, an individual who customises and applies mods in games. *Modding* denotes the process of developing or implementing mods.

mod menu A user interface that enables players to add new features to the game or change the behaviour of the game. In *GTA V*, mod menus are found in both the PC and console versions.

rage cheating A style of cheating in which players activate most or all available cheating features, making their actions clearly identifiable as cheating.

spawning In online games, spawning is the live creation of a character, item, or non-player character within the environment.

1 Introduction

Contents

Individuals are taught that cheating in games is undesirable from an early age. However, the conventional perspective overlooks the complex dynamics that reach beyond the confines of gaming. The broader implications of these dynamics have yet to be understood. This thesis explores game cheating communities as a starting point for understanding the multifaceted nature of cheating. By analysing its social connotations, the research investigates the conditions under which cheating is considered harmful, and the unique circumstances where it might actually be seen as constructive.

This opening chapter sets the stage by tracing a brief history of cheating, and its current perception as a significant issue within the gaming industry. Following an explanation of our motivation for delving into cheating communities, we present our central research question alongside the methodologies used to approach the question. Following this, we highlight the contributions of this thesis, define the key terms and concepts used throughout, and present the author's positionality statement. The chapter concludes with a structured summary of the thesis and a list of related publications.

1.1 A Brief History of Cheating

Plentiful evidence throughout history shows that virtually anything can be fixed or tampered with to advance in a game. Some of the earliest records of cheating date back to the times of ancient Rome (Lanciani 1892) and ancient India (J. Bell 1991) where false tricks in dice games were used by kings and emperors. In Imperial China, the operators of gambling stalls would cheat the players of their money using false dice tricks to make the players purposefully indebted (Chan *et al.* 2019). Cotton's book (1930), originally published in 1674, details the classic and hybrid cheating techniques for dice games at the time. In card games, even noblemen were caught red-handed, engaging in dexterous deception to secure favourable outcomes (Chatto 1848).

In the late twentieth century, the advent of interactive electronic devices sparked a rise in the world of video games. The industry experienced significant growth with a simultaneous rise in homemade device customisations. These were aimed at gaining shortcuts and tips within games, which were often shared in the form of cheat codes via word-of-mouth or magazines. Game magazines were particularly popular among gamers until the early 1990s for their tips and tricks section covering ways to unlock new capabilities (Consalvo 2007).

It was not until the introduction of online multiplayer games and their achievement systems that players saw a significant shift in perception towards cheating. Cheating was increasingly perceived as an act that comes at the cost of another,

either by disrupting the play experience of opponents or undermining the value of the game itself. Despite substantial investments made by game providers over the past two decades to deter cheating, the issue has persisted and evolved with the continuous development of new cheating methods. This presence of cheating in the gaming industry is demonstrated by a compelling body of evidence, including company reports, legal proceedings, and player feedback (Polhamus 2021; Boudreau 2018; BBC 2020; U.S. District Court 2022; U.S. District Court 2021; U.S. District Court 2017; U.S. District Court 2016; Irdeto 2018).

1.2 The Problem with Cheating

There are certain aspects to cheating that warrant exploration in academic research. We review its scale and the detrimental effects documented so far to emphasise the importance of acquiring further insights into this domain.

The scale of cheating. Little is questioned about the social, cultural, and economic significance of games. Within the past two decades, online games have soared to become one of the most popular and accessible sources of entertainment, as reflected in the revenue of the video game industry and the ever-increasing time spent on games by the consumers. The overall global market size for gaming was valued at US$195.65 billion in 2021 (GVR 2022), with the financial documents, such as those by *Call of Duty*'s Activision Blizzard and *Fortnite*'s Epic Games, revealing revenue growth of US$2 billion in 2021 and US$5 billion in 2018 (Takahashi 2021; Clark 2021). The scale of the gaming industry is also evidenced by the quantitative metrics of how dedicated the players are. A 2020 survey found that players from countries such as Japan and the UK spent more than 20 hours a week playing games, while players in an older study in *World of Warcraft (WoW)* spent nearly 22 hours a week (N. Yee 2006b). Studies across the years have found that players not only engage in long hours but also trade associated items or currency, boosting the in-game economy to a significant scale (M. Brown 2018; Castronova 2001).

Despite its remarkable growth and success, the gaming industry grapples with a major problem—cheating. Many game servers today are secured against cheating using Valve Anti-Cheat (VAC) systems through Steam, the largest game distribution platform as of 2022. Once a VAC software detects a cheat in a player's system, it permanently bans them without releasing any information on the time of detection, so that the player cannot precisely trace which moves were detected. While exact numbers are not often made public, the periodic announcements of account suspensions by companies indicate that this is an ongoing area of concern. Some notable examples include over 60,000 Steam accounts that were banned in one day in July 2018 (Wells 2018), and over 600,000 banned throughout December 2018 (Boudreau 2018). In 2021, Activision Blizzard banned over 100,000 accounts in *Call of Duty* in a single day (Polhamus 2021).

In 2018, a survey including 5,911 players showed that nearly half of its participants from China and South Korea had experience cheating themselves in games, contributing to the evidence of its pervasiveness in the gaming industry. In academia, scholars have found that cheating behaviours can even be contagious to other players (Blackburn *et al.* 2012; Zuo *et al.* 2016; Kim & Tsvetkova 2021), raising concerns about cheating that become even more common in socially engaging environments. In response to growing challenges, game developers have regularly presented their anti-cheating efforts at conferences, emphasising how cheaters continually develop more sophisticated tactics to counter each new security measure implemented (Steamworks 2016).

Cheating has grown into a sizeable industry worth millions of dollars according to industry reports (Maiberg 2014). As of 2020, the websites commercialising cheat software mostly run on a subscription model ranging from US$10 to US$100, even costing US$500 for an "elite" cheat (Pontiroli 2019). Without any direct intervention from game publishers, these businesses appear to enable players to cheat with greater ease. As such, the extensive scale of cheating implies potential implications for a wide range of social and technical practices that might be beyond the control of game publishers (Kahila *et al.* 2023).

The harms of cheating. Game scholars have long debated cheating as a moral offence, arguing that it enables certain players to derive enjoyment at the expense of others, undermining the enjoyment and participation of those affected (Huizinga 1944; Kimppa & Bissett 2005). It has also been argued that cheating defeats the purpose of gameplay as it disregards the rules intended to be universally upheld by all participants (Caillois 2001). Non-profit organisations have also recognised cheating and game manipulation as key behaviours within their framework for identifying disruptive or harmful conduct in game environments (ADL & FPA 2020a). This phenomenon is evident in practice, where frequent encounters with cheaters have been found to discourage players from playing games. A global survey (2018) across China, Germany, Japan, South Korea, the UK and the USA found that over 60% of online players have had their experience negatively impacted by others cheating, and 77% of the players would choose to stop playing if they witnessed cheating. When players feel that they are not on a level-playing field, the time and efforts they invest in advancing in a game appear futile in the face of cheaters who achieve the same more easily. For this reason, cheating can also disrupt the intended balance of the game, making it harder for those who are not cheating to compete in games.

Cheating negatively affects game developers and publishers with financial and reputational costs. When cheaters manipulate the game mechanics, it undermines the reputation of the companies and the creative value of games as products (U.S. District Court 2022; Irdeto 2018; Davis & Price 2008), eroding the trust of the wider user base in the quality of their products. In 2021, the video game company Bungie, the developer behind the popular shooter game *Destiny 2*, stressed the impact cheating has on its operations and finances in its lawsuit against a cheat software developer: "Bungie spends upwards of roughly US$1,250,000 per year on its anti-cheating measures, a sum that does not include the cost to Bungie of external expert resources, legal costs, forward-looking investments in anti-cheat infrastructure, or infrastructure costs used for but not exclusively dedicated to game security" (U.S. District Court 2021). As such, the negative repercussions

that cheating brings upon fellow gamers, assets, and organisations underscore the importance of gaining a refined understanding of this subject.

1.3 Motivation

Understanding the social dynamics that shape players' opportunities and choices to cheat in games can help uncover the nuanced dimensions of cheating that have remained underexplored. Online platforms today facilitate seamless communication and information access, easing the growth of niche communities. In light of these affordances, communities dedicated to cheating have markedly broadened their visibility, as evidenced by the myriad of platforms, from item-trading websites to discussion boards, which surface with a simple online search (Pontiroli 2019; Goodpastor 2021; Karami & McCoy 2013). Some demonstrate their longevity as a badge of honour, branding themselves as "the oldest game cheating community in existence [...] leading the game hacking scene for over 15 years" (Pontiroli 2019). While informal groups related to cheating have existed for decades prior, as seen in older offline hobby clubs and friend circles (Tarantola 2019), the rise of social platforms has fundamentally reshaped the way users with a shared interest in cheating interact with one another and exchange information.

Despite its prevalence online, the study of cheating within community dynamics remains largely unexplored. This may stem from the prevailing perspective that considers cheating as the act of an isolated individual, rather than a practice underpinned by a wider social dynamic. This stance is reinforced by criticisms that dismiss the entirety of cheating as illegitimate, even when these critiques are based on often vaguely defined notions of unethical behaviour (Russell 2014). As a result, many have inadvertently glossed over the value of research in this area, sidelining the social implications for players themselves.

In particular, there is a lack of understanding of the dynamics among the cheating players—both those demonstrating harmful behaviours and potentially more vulnerable members of the community. The harms of cheating are widely recognised in the general gaming context, yet there remains a knowledge gap

pertaining to its specific segments that warrant more attention, including the type of users who are involved, their motivations, and the methods they employ to resist anti-cheating measures. Because its impact extends beyond gameplay, addressing this issue requires a deeper and more comprehensive understanding of the social dynamics within the broader online ecosystem, beyond the realm of gaming.

Recent findings in CSCW research reveal that even niche or small-scale communities can manifest distinct practices that ripple through the wider online ecosystem (Hwang & Foote 2021; Allison 2020). Applying this paradigm to game cheating suggests the value of a community-centric approach as a starting point for exploring the subject. Many questions remain regarding the communal aspects of cheating: How are communities formed? How are they maintained? How do they manage the risks of cheating? These insights are instrumental in mapping out the broader implications of cheating, and identifying areas that warrant targeted interventions.

1.4 Research Question

This thesis adopts a community-led focus to explore the online social practices overlooked in the discourse on game cheating. We ask the following central research question: **How are game cheating communities established, reinforced, and governed?** The three aspects were chosen to progressively lay the groundwork for understanding the structures and practices surrounding cheating, and ultimately inform industries with directions for targeted interventions. *Establish* uncovers the prevalent values associated with cheating that mark the inception of meaningful social interactions, *reinforce* illustrates the structural mechanisms that promote the means to cheat, and *govern* explores the approach to maintaining cheating communities and their outputs.

To answer the central research question, we set out the following objectives:

1. explore the social dynamics and values that transpire from the play experience of cheating (Chapter 4),
2. identify the participatory roles and platform environments that support cheating (Chapter 5),

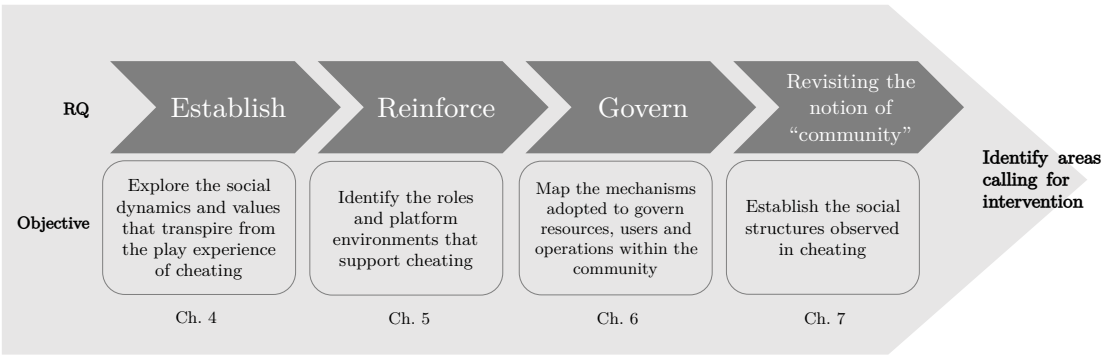

Figure 1.1: Breakdown of the central research question and key objectives.

3. uncover the key mechanisms adopted to govern the users, resources, and operations within the community (Chapter 6), and
4. establish a framework for the social structures observed in cheating, and outline areas that require intervention (Chapter 7).

Figure 1.1 provides a breakdown of the central research question according to the three components of the question. Drawing on the empirical findings addressing the first three components, this thesis then re-examines the concept of community, offering a more nuanced understanding of the social collectives involved in cheating, and applying these insights to inform industry interventions.

1.5 Contributions

The contributions of this thesis fall into three areas of research.

1. **Computer-supported cooperative work (CSCW)**: By shedding light on a hard-to-access and underexplored community, we uncover a refined understanding of a community of users typically associated with disruptive behaviours. Our investigation demonstrates that within these spaces, victims may be subject to harms, such as toxic behaviours, or even inadvertently facilitate harm. We offer an overview that illuminates previously overlooked areas of concern, surfacing critical moral implications surrounding communal activities related to cheating (Chapter 7). While game companies have

traditionally been the sole entities responsible for mitigating cheating, our findings suggest that effective interventions must extend beyond the boundaries of game providers, and encompass broader industry collaboration. We particularly recommend that social media platforms adopt proactive strategies to recognise and address behaviours potentially harmful to users.

2. **Human-computer interaction (HCI) x Game studies**: The thesis calls attention to the socio-technical nature of one of the most overlooked yet persistent activities in online gaming. Cheating serves as an example of an unanticipated use of entertainment technology, where individuals subvert computer systems in the pursuit of enjoyment. Through our investigation into the play experience of cheating, we uncover user perspectives that reveal their actual needs and desires, including those that evolve through the social interactions within gaming. Chapter 4 provides an understanding of how cheating can empower players to break free from the constraints imposed by game designers, while maintaining their enjoyment of games. By revealing the gap between player experiences and original game design objectives, this analysis adds to the ongoing research in player-centred design, and calls for more strategic collaboration between the stakeholders.
3. **Cyber security**: Our examination of cheating, and its ties to cyber security and analogous security threats, provides a unique perspective on the prevailing issues. In Section 5.5.1, we identify activities and roles within cheating communities that bear more significant legal implications than others, which may be considered particularly detrimental within the wider online ecosystem. We provide further evidence of cyber threats by observing toxic behaviours that loom in specific contexts of cheating towards vulnerable players (Section 8.3.1, 4.4.2, and 6.4.2). These findings are followed up with potential intervention strategies that could help mitigate harms within online communities (Section 7.6). The insights derived from this thesis have extended into a spin-off study that delves into the intersections between cheating and cybercrime, revealing how technology abuse can intersect with playful intentions (Section 8.3.2).

Figure 1.2: A high-level outline of the empirical work contained in the thesis.

While the discussions mainly focus on potential risks, we also consider the opportunity to redirect relevant skills towards a prosocial trajectory in the cyber security industry (e.g., by employing educational games that share analogous principles with cyber security).

The methodological contributions of this thesis are discussed in Section 3.5.

1.6 Thesis Outline

The empirical studies in this thesis are consistently aligned to fit within the central research question. This is demonstrated in Figure 1.2 where the grey figures indicate the objectives, and the blue boxes indicate the focus of the chapters. The studies have either been published or are planned for publication in academic conferences and journals. The overall thesis is organised as follows:

- Chapter 2 sets the context of our research interests in the existing literature. It encompasses a wide body of work on cheating, drawing from a range of sources in the existing literature, including classifications, empirical research, and

industry reports. This comprehensive analysis sheds light on the considerable divergence in narratives within the field of game cheating research. Subsequently, we identify knowledge gaps and opportunities for further research that this thesis aims to address.

- Chapter 3 describes the chosen research methodology. We provide an overview of the research philosophy and approach, which underpin the choice of methods. We provide details on the incorporated qualitative data collection and analysis techniques to gain a comprehensive view of the experiences, phenomena, and context of cheating.
- Chapter 4 (empirical) lays the groundwork for uncovering the values that drive social dynamics among them. We explore both the experiences of cheating players and player perceptions of game publishers to aid understanding of the outer-game elements that influence their underlying sentiments.
- Chapter 5 (empirical) investigates the structural elements that enable cheating by investigating the modes of engagement and platform affordances associated with the activity.
- Chapter 6 (empirical) expands on the two antecedent chapters by exploring the governance mechanisms of the community overseeing the associated resources and interactions.
- Chapter 7 (empirical) presents an overview of the social structures associated with cheating, drawing from the preceding studies and the literature review. An expert review is applied to assess the practical applicability of this framework, followed by an outline of areas requiring intervention and reflections on the notion of industry accountability.
- In Chapter 8, we review our overarching goals and results in the thesis, and provide reflections on the methodology applied and the ethical dimensions of the subject. Based on the empirical and theoretical insights, we revisit the claim regarding the relevance of cheating to cybercrime (NCCU 2017) by providing two case studies examining the presence of cyber threats in cheating

communities. Then, we follow up with possible directions for future work in academia and industry.

- In Chapter 9, we close the thesis by summing up the points that surfaced throughout the studies, and the key takeaways.

1.7 Scope

In the following, we narrow the scope of our research, and clarify the vocabularies used throughout the thesis.

Cheating. Due to the dynamic landscape of technologies and trends in gaming, defining cheating is a challenge on its own; each practice is rendered, viewed, and thus defined differently by the users, as we review in Chapter 2. In this thesis, we adopt the definition proposed by Yan and Randell (2005b), which characterises cheating as gaining an unfair advantage over opponents or engaging in activities that enable players to achieve goals which are otherwise unattainable. Note that the term 'unattainable' here pertains to activities that are either unauthorised or theoretically inaccessible by an average player. As a component of the exploratory research, the investigations covered in this thesis encompass unauthorised in-game actions, specifically those not approved by game publishers, that can have adverse effects on other players. *This includes activities beyond those explicitly labelled as 'cheating' and extends to unauthorised actions with effects on others that may not be ascribed to the same terminology due to the specific context of the game.* Chapter 4 explores modding in a specific context of unauthorised alterations to games, which are distinct from modifications sometimes endorsed by game companies.

Community. To form our initial assumptions about a community, this thesis draws upon the insights of É. Durkheim's seminal book, *The Division of Labour* (1964). Set against the backdrop of the late 19th century, the book entails how in traditional, homogenous societies, solidarity comes from similarities ('mechanical' solidarity) but in more complex or industrial societies, it arises from interdependence

among individuals with specialised roles ('organic' solidarity). Durkheim posits that assigning specific tasks to individuals best suited for them increases societal efficiency and productivity altogether, and discusses how proper regulation and moral education are both necessary to mitigate any negative effects (e.g., social fragmentation), while ensuring that such division of labour contributes positively to social solidarity. This concept has resonated through contemporary scholarship, with academics exploring how the interconnected nature of the Internet empowers users to form connections based on shared interests (Wellman, Salaff, *et al.* 1996; Wellman & Gulia 2018; Gelman *et al.* 2016). This perspective holds particular relevance to our research on cheating due to the online nature of the activity, which allows users to connect based on shared interests. Therefore, we initially adopt Durkheim's perspective to identify the alleged community that is the focus of our inquiry.

Cheat or cheating community. We refer to a community specific to cheaters in online games as a cheat community or cheating community. Based on the above definition of a community (Durkheim 1964), we propose a preliminary definition of a cheat community: a group of individuals with shared interests or skills in game cheating.

Community resource Every well-governed community has a shared resource to be managed (Ostrom 1990). In the context of cheat communities, users primarily seek to evade scrutiny from anti-cheat developers, and covertly gain an advantage over fair players. We claim that any social or technical asset one accumulates to advance in cheating and evade detection is a cheating resource. Other terms such as information, artefacts, and outputs are used interchangeably throughout the thesis as part of the said resource. Section 6.4 details the resources sought out in practice.

Game mode, genre, and type. We focus on multiplayer games as we are interested in finding cheats that are used to influence others in a social setting. In a multiplayer game, more than one person can simultaneously play in the same environment. They can either play against each other, cooperate as a team, or

supervise each other's style of playing. Our focus is on First-person shooter (FPS) and action-adventure game genres. These genres have been selected because they encompass some of the highest-grossing and user-dense games in contemporary gaming, making them appropriate for our investigation. The investigation primarily centres around the communities of *Counter-Strike: Global Offensive (CS:GO)* and *Grand Theft Auto V (GTA V)*. Throughout the data collection process, we had to make exclusions regarding certain games and genres from our investigation. This was primarily due to challenges in accessing the relevant population, and encountering significantly low response rates during participant recruitment. The games we considered early on in the research but ultimately excluded from our study were *Dota 2* (2013), *League of Legends* (2009), *PlayerUnknown's Battlegrounds (PUBG)* (2017), *Final Fantasy XIV* (2013), and *Minecraft* (2011). In the limited access we obtained, we leveraged the insights to enhance the evaluation of the findings related to the play experience of cheating (Section 4.3.3)—these games were *Dark Souls 3* (2016) and *World of Warcraft* (2004).

Further exclusion criteria included games that demonstrated an inherent ambiguity in defining cheating, making it challenging to categorise them as instances of unauthorised behaviour, as observed in cases of theft and deception in *EVE Online* (2003) (Carter *et al.* 2016; Carter 2022). Others were excluded if they were considered too limited in scope to align with the research objectives (e.g., indie games, and mobile or virtual reality games).

1.8 Positionality Statement

This section accounts for the underlying motivations and backgrounds of the researcher, given the influence these factors can have on the framing of the research. In writing this DPhil thesis, the author brings an interdisciplinary background that blends cyber security and economics, with a particular focus on cybercrime. Their journey through this field is underpinned by both academic research and practical experience. Before and during their doctoral research, they worked as a junior analyst at a power plant and as a product manager at Cloudflare, an

internet infrastructure company, focusing on Distributed denial of service (DDoS) mitigation solutions. Prior to embarking on their DPhil, the author conducted research on security operation centres, and explored theoretical concepts in cyber security, particularly the principle of security by obscurity in the context of wireless network protocols. In their first year at the Centre for Doctoral Training in Cyber Security, they examined the impacts of the shutdown of public Reddit forums related to drugs, and the subsequent rise of equivalent platforms on the darknet. This investigation served as a stepping stone for their interest towards the domain of cybercrime and the underlying social mechanisms.

This phase was pivotal in expanding their social network, enabling connections with both industry professionals and academics focused on cybercrime research, where they were exposed to the latest areas of interest within cybercrime. Notably, their interactions with Jonathan Lusthaus, Ivan Flechais, and Thomas Burton (the former two becoming the supervisors of this thesis), who had explored the topic of game cheating that year, shed light on the potential overlap between cybercrime and online gaming that had been relatively underexplored at the time (Burton 2018). The author also engaged with the PREVENT team of the UK's National Crime Agency to discuss their work to date associated with gaming and protecting young users from being drawn into cybercrime. These discussions highlighted the potential role of academic research in uncovering complex aspects of game cheating that are often overlooked in practical, operational settings. During the DPhil programme, their work at Cloudflare further expanded their perspective, where interacting with some experts with prior experience in gaming provided valuable insights into the latest challenges and opportunities. As such, the combination of experiences and dialogues across various sectors laid a solid foundation for this thesis.

The premise of the thesis initially took shape under the significant influence of an NCA report (2017), which suggested a potential pathway from game cheating to cybercrime. However, based on recommendations from assessors and peer reviewers, a shift in approach was suggested to first explore game cheating on its own terms, without presupposing its connection to misconduct. This advice led the author to

instead adopt an outside-in approach to holistically examine the game cheating ecosystem and its dynamics. In hindsight, this recalibrated approach allowed the research to develop in more valuable ways that not only inform the cybercrime initiatives led by law enforcement agencies as initially intended but also organisations and academic sectors on safeguarding online users and communities.

The author had not previously conducted research on games in an academic context, and acquired knowledge in this area through ongoing research and social networking instead. Their personal gaming experience does not align with the types of games discussed in this thesis (i.e., *Final Fantasy XIV* and *Subnautica*). The author has never engaged in cheating within multiplayer gaming environments.

1.9 Publications

The content of this thesis has been presented in the form of full and short papers, as well as workshops, at conferences and in journals.

1. **Selina Cho**. "A Community-Based Investigation of Competitive Cheating". In *Extended Abstracts of the 2022 Annual Symposium on Computer-Human Interaction in Play*. CHI PLAY '22. Bremen, Germany: Association for Computing Machinery, 2022, pp. 367–369. DOI: 10.1145/3505270.3558373.

   — This presents an overview of the doctoral research compiled by the author.

2. **Selina Cho** and Ivan Flechais. "Cheating the Cheaters: A Look Inside the Toxic Culture of Game Cheating Communities". In *Proceedings of the 2022 Digital Games Research Association International Conference*. DiGRA '22. Kraków, Poland, July 7–11, 2022.

   — The first author designed the study, collected the data, analysed it with the second author, and drafted the manuscript. The development of this manuscript was significantly influenced by Section 6.5.1, and is briefly outlined in Section 8.3.1.

3. **Selina Cho**, Jonathan Lusthaus, and Ivan Flechais. "The Slippery Slope: Exploring the Parallels Between Game Cheating and Cybercrime Through Routine Activity Theory". In *2023 APWG Symposium on Electronic Crime Research*. eCrime '23. Barcelona, Spain: IEEE, 2023, pp. 1–13. DOI: 10.1109/eCrime61234.2023.10485501.

   — The first author collected the data, analysed it with the second and third authors, and drafted the manuscript. This study is a derivative work developed from the raw data collected for the thesis, and is briefly outlined in Section 8.3.2.

4. **Selina Cho**, Jonathan Lusthaus, and Ivan Flechais. "Unpacking the Dynamics of Harm in Game Cheating Communities: A Guiding Framework for Cross-Industry Intervention". In *Games: Research and Practice*, Volume 2, Issue 2, Article no. 12. Association for Computing Machinery, 2024, pp. 1–17. DOI: 10.1145/3656558.

   — The first author designed the study, conducted data collection and analysis, and drafted the manuscript. The content of this manuscript has been predominantly guided by Chapter 7.

5. Arianna Boldi, **Selina Cho**, Yubo Kou, Amon Rapp, and Max V. Birk. "Methodological Challenges, Risks and Ethical Implications in Game Research". In *Companion Proceedings of the Annual Symposium on Computer-Human Interaction in Play*. CHI PLAY Companion '23. Stratford, ON, Canada: Association for Computing Machinery, 2023, pp. 350–351. DOI: 10.1145/3573382.3616026.

   — The second author collaboratively wrote the proposal with the first author, following discussions about their shared experiences and the importance of the topic. The proposal and the content of the workshop were partially shaped by the reflections from Sections 3.5.3 and 8.4.3. During the workshop, the second author oversaw and facilitated one of the discussion groups.

6. Arianna Boldi, **Selina Cho**, Yubo Kou, Amon Rapp, and Max V. Birk. "Ethical Challenges in Video Game Research: Experiences and Reflections". In *Interactions*, Volume 32, Issue 3. Association for Computing Machinery, 2025, pp. 34–39. DOI: 10.1145/3723137.

   — This article presents the reflections following the previous workshop with video game researchers. The second author contributed personal experiences and insights that informed the analysis and was involved in drafting portions of the manuscript.

7. **Selina Cho**, Jonathan Lusthaus, and Ivan Flechais. "Inside the Ecosystem of Game Cheating: From Bystanders to Enablers, and Their Cybercrime Analogues". *Under review.*

   — The first author designed the study, conducted data collection and analysis, and drafted the manuscript. This manuscript represents a portion of the research conducted in Chapter 5.

2

Game Cheating: A Literature Review

Contents

In this chapter, we review the literature to date on cheating to lay the background of the thesis. We first outline existing classifications of cheating and the related unauthorised play modes in online games. Then, we examine the literature on cheating from three perspectives—individual, community, and public—to highlight that cheating is not a fixed concept but one shaped by group dynamics and norms. The individual-oriented perspective concerns understanding one's motivations and

perceptions, which much of the existing research has focused on. The community perspective allows us to situate this knowledge in a social environment beyond gaming. In addition, we summarise the narratives used in academic research and industry work to highlight the limitations of prevailing normative perspectives on cheating, and position our thesis beyond these conventional views. Finally, we identify research gaps and limitations in the existing literature.

2.1 The Concept

Cheating is a catch-all term that indicates a rule-breaking activity in online games. The most widely accepted definition of cheating is the following: A behaviour whose "advantage is unfair to his peer players or the target is one that he is not supposed to have achieved" when assessed "according to the game rules or at the discretion of the game operator" (Yan & Randell 2005b). In practice, the definition is dependent on cultures, regions, and even its scale. The variety of its nature and styles has posed challenges for scholars attempting to delineate the boundaries of cheating, with some arguing that the lack of clarity subjects a wide range of immoral behaviours to the same level of accusation as definitively identifiable cheating (Russell 2014).

In the following, we examine existing classifications in the literature concerning cheating and unauthorised play modes in online games. These classifications showcase the diverse perspectives that have been previously explored. In Section 2.1.3, we discuss the common types of cheating observed in practice.

2.1.1 Taxonomies

The existing scholarship demonstrates the difficulty in scoping the concept of cheating (Yan & Randell 2005a; Meades 2015b; De Paoli & A. Kerr 2009). This is best understood by reviewing taxonomies which organise varied forms of cheating. The most common way to arrange the information is by identifying the key characteristics, common methods, and motivations. Characteristics and methods differ in that various methods may be available to enact the same kind of cheating, or the same method could be used to generate multiple ways to bypass and cheat.

Table 2.1 lays out the academic work to date about cheating and unauthorised modding. We provide details on the motivations in the next section (Chapter 2.2).

One of the earliest approaches to systematically conceptualise cheating was by Yan and Randell (2005a), who provided a taxonomy through which we can understand the nature of cheating: vulnerability (what is exploited?), consequence (what type of failure can be caused?), and cheating principal (who is cheating?). They argue that cheating in many online games is a result of game systems that are "insecure by design" which are either "poor or non-existent", tracing the lack of security expertise in game developers as a likely reason. Chen and colleagues (2004) provided a short review of crimes in online multiplayer games situated on virtual property, such as theft, fraud, threat, and sabotage.

Cheating has also been studied under the broader umbrella of subversive, disruptive, or oppositional behaviours. The behaviours concern but are not limited to trolling (Thacker & Mark D. Griffiths 2012), griefing (Rubin & Camm 2013; Chesney *et al.* 2009), and "abusing" games (Meades 2015a). While many of these behaviours share similarities with one another, it remains a challenge to reach a consensus on one that incorporates all the elements seen in popular games (Meades 2015b; Kou & Nardi 2013; Linderoth & Mortensen 2015; Irwin & Naweed 2018). Meades (2015b) explored counterplay in online games, which goes against "the general expectation of compliant conventional play". He claims it "instead contains a dynamic that works against rules, against other players, [and] seeks alternate ways of playing and potentially different pleasures". The concept of unauthorised cheating aligns with this definition, thus it can be inferred that cheating is both representative of counterplay in itself or facilitating other modes of counterplay. Linderoth and Mortensen (2015) took an aesthetic approach to a similar topic by exploring what they called dark play through various themes and behaviours in games.

The scope of cheating also depends on stakeholders' perspectives, including but not limited to game publishers, developers, and players. Recently, Ma *et al.* (2022) looked at eSports behaviours which are considered to be rule-breaking in the eyes of game publishers, and the contexts which influence their approach to

rules enforcement. Irwin and Naweed (2018) reviewed types of "unsportsmanlike" behaviour perceived by the spectators of competitive eSports. Technological advancements have diversified the gaming landscape over the years, making it challenging to establish a consensus on what defines cheating (Paay *et al.* 2018). Within any realm of play, from offline chess to *World of Warcraft*, general etiquettes are anticipated. However, the boundaries of what we consider acceptable are constantly challenged by the new possibilities that emerging technologies offer (e.g., moderating voice-based communities or virtual reality (Jiang, Kiene, *et al.* 2019; Blackwell *et al.* 2019)).

Unauthorised modding While cheating is the most common term used to refer to a rule-breaking action, there are other terms that can refer to it as well, which vary across games and situational contexts. The authors of this work are aware that there can be a lot of sensitivity around associating some of these terms with cheating.

Sharing similar characteristics with 'cheats' (i.e., cheat software) are 'mods' (i.e., modifications) which alter the contents of an original video game. They operate on top of an existing game, and enable a player (or a 'modder') to modify the features from the original design, such as adding new features or addressing bugs (Poretski & Arazy 2017; Sotamaa 2010). The term 'mods' is sometimes used interchangeably with 'cheats' but this is not to be confused with approved mods which the players can use with full endorsement by the game companies. In the latter case, mods use methods that game developers approve, while cheats can produce similar results through methods that have not been vetted or approved by developers. Unlike cheating, using game mods can be considered to add replay value to games (Scacchi 2011). As a result, mods are sometimes tolerated and even supported by the game companies, as seen with *DotA Allstars* (a mod from *Warcraft 3*) and *Counter-Strike* (a mod from *Half-Life*).

Action	Typology	Literature
Cheating	Categories and methods	- Common vectors of cheating (Yan & Randell 2009; Pritchard 2000) - Characteristics of popular cheats (Consalvo 2007; Yan & Randell 2005b) - Controversial play behaviours (Linderoth & Mortensen 2015) - Anti-social and oppositional play behaviours (Meades 2015b) - Unsportsmanlike behaviour (Irwin & Naweed 2018)
	Motivation	- Reasons for cheating (Doherty *et al.* 2014) - Motivations of cheating in multiplayer games (Ribbens *et al.* 2011) - Intention to cheat (R. Sharma *et al.* 2021) - Motivations of cheating in mobile AR games (Paay *et al.* 2018) - Rationalising process for cheating (V. Chen & Ong 2018) - Socio-cognitive environments that enable cheating (Wu & V. Chen 2013) - Emotional and psychological benefits of cheating in single-player games (Passmore *et al.* 2020)
Modding	Categories and methods	- Characteristics of popular mods in forums (Dey *et al.* 2016; D. Lee, Lin, *et al.* 2020) - Characteristics of *Minecraft* mods (D. Lee, Rajbahadur, *et al.* 2020)
	Motivation	- Incentives and practices (Sotamaa 2010; Poor 2014)

Table 2.1: An overview of the literature on taxonomies of cheating and modding.

2.1.2 Single-player and multiplayer games

In multiplayer games, a consensus among the players is that gaining an unfair advantage over other players should not be tolerated. This view arises from the value placed on meritocratic achievements, as indicated by features such as leaderboards or rare in-game items, around which the gameplay is originally designed. Kimppa and Bisset consider cheating a form of moral offence and discuss the issues arising

from cheating (Kimppa & Bissett 2005). The three points they make on the moral offence are 1) pursuing one's happiness at the cost of another's ability to pursue their happiness, 2) seeing others solely as a means to one's own satisfaction rather than a subject to play with on a fair ground, and 3) eroding the intended play value of a game through the harms of cheating. These all highlight how cheaters' actions come at the expense of other stakeholders.

Passmore et al. (2020) explored the beliefs and experiences of cheating in single-player games, and found that unlike in multiplayer settings, the players openly endorse the activity, as a way to relieve stress and exercise agency over their needs. The concept of harm is also inherently different between single-player and multiplayer games. A previous study has found that players frequently decide whether an activity is noteworthy of reporting or not based on the existence of harm (Beres *et al.* 2021). This is common in the context of single-player games where there are no other competing players to directly harm, though many game developers claim how it still affects them (HCJ 2020; Zwiezen 2021).

In recent years, the game industry has witnessed the line between many single-player and multiplayer game brands blur over time, as much of the mechanics in the latter carry over to the former. For instance, developers have introduced a mod to enable players in *Grand Theft Auto V* to complete missions with friends and use mods without being banned. Likewise, FromSoft's *Elden Ring* adopted a co-op mod a few months after the release of the game, enabling multiple players to team up for combats and share the progression in the game. Such changes suggest that drawing a clear distinction between the player modes is not as clear-cut in practice as it once was (Consalvo 2007). The affordances of networked technologies and access to new variants of mods in external platforms imply that game designs are subject to change over time to better suit the interests of the players.

2.1.3 Common methods of cheating

In practice, unauthorised cheating techniques can be divided into two categories: those that manipulate the internal mechanics of a game and those that employ

external mechanics to influence gameplay. This thesis covers both aspects of cheating to an extent which we elaborate in this section. However, the forms of cheat software discussed in the following empirical chapters frequently refer to external variants, which are typically provided by third-party vendors. This reflects a distinct community preference for technically dedicated cheat tools over casual or spontaneous tactics in modern-day competitive gaming.

Internal mechanics

Among those that manipulate the internal mechanics of games, our focus is particularly on the exploitation of bugs and glitches as a means to illegitimately acquire resources. This also encompasses the misplacement of objects within the game environment, imposing nuisances or unwarranted obstacles upon the opponents. Such actions not only disrupt the integrity of the game but also place opponents at a competitive disadvantage, undermining the intended fairness and dynamics of the play experience. Some may exploit network lagging in games as well. Lagging occurs when the data stream between one or more players is delayed or interrupted, causing motion to stutter and making the player appear to be moving erratically. These can be deliberately triggered in an online game to prevent the player from being eliminated, and instead making it seem as if they are teleporting or have become invisible to their opponents.

Certain tactics might be perceived as manipulative strategies rather than outright cheating. These tactics utilise mechanics permitted within the game, albeit in an arguably unsportsmanlike manner (Irwin & Naweed 2018). Examples include manipulating actions, resources or abilities to maximise rewards. Practices such as kill stealing—where a player takes credit for an opponent's defeat significantly contributed by another player—and ninja looting—unfairly taking loot from a defeated player—are examples of such tactics. These actions, while controversial, are not considered cheating within the context of this thesis, as they do not fundamentally violate the established rules of the game.

External mechanics

External mechanics constitute the primary focus of the cheat types examined in the empirical studies of this thesis. This category includes the use of third-party—or sometimes self-created—software and hardware to enhance performance or access features that are otherwise restricted. The most common examples of cheating through external mechanics include aimbots and triggerbots. Aimbot is a common program used in FPS games that lets the player shoot at in-game opponents without putting conscious effort into aiming their weapons. It operates by using the player's system to gather information about others, determining the positions of opponents relative to the player, and then automatically targeting them, even when they are supposedly not visible from the player's perspective. Some aimbots have intentional defects built into them to conceal their use from others, and are often used in combination with triggerbots. Triggerbots are more subtle than aimbots and are sometimes more challenging to identify whether they are being used. When a triggerbot is activated, the player can have their crosshair over the target, and let the bot entirely handle when and how the weapon is fired, while the player entirely controls the mouse movement. Triggerbots can also be enabled with flaws or can be manually toggled on and off to conceal their use. Some cheats, such as maphacks, can boost the visual effects to enhance a player's situational awareness, and can also be used to reveal the location of opponents or hidden items nearby.

In the context of *CS:GO* within this thesis, our empirical research shed light on a few cheat software that stand out due to their prominence in the market. This insight is derived from the interviews and prior background research. *Skeet* (also recognised as *Gamesense*), *Neverlose*, *Onetap*, *Aimware* are some of the well-known brands in this domain at the time of this writing, each backed by their own customer support and subcommunities. Products from these brands offer a broad spectrum of cheating capabilities, such as aimbots, wallhacks, and extra-sensory perception, among others.

While these tools share the goal of providing players with unfair advantages, they differ in their reputations, features, and accessibility to users. *Skeet*, for instance, is celebrated for its exclusivity within the cheating community, being accessible

only by invitation. This exclusivity contributes to its desirability, attributed to both the prestige it carries and the effectiveness in avoiding detection by anti-cheat systems. *Aimware*, on the other hand, is recognised for its wider availability and the reliability it has established over the years. It supports a variety of games, not just *CS:GO*, and offers extensive customisation options to accommodate a broad spectrum of cheating preferences.

Applying these cheats typically involves loading a Lua script, accessed through the game console or a built-in editor within the cheat software. By launching the game with administrator privileges and opting to load the module, players can activate a range of customisable features, enabling them to adapt their cheating tools to fit their specific play styles. Even those with limited programming knowledge can access these cheats, provided they are content with using the features as they are, without extensive personal customisation. The perceived risk of being detected and the ease of use for these cheat tools would vary depending on player preferences.

Notably, being banned from *CS:GO* for cheating does not restrict access to the cheat software itself, permitting users to reapply these cheats with new game accounts. Therefore, while the cheat software is non-transferable and tied to the original purchaser, it enables continuous usage across different gaming accounts.

In the context of unauthorised modding in *GTA V Online*, a popular online multiplayer action-adventure game, notable names include *2Take1* and *Kiddions*, at the time of writing. These platforms provide various features such as mod menus, which are user interfaces within the game that allow players to apply modifications. In-game mechanics can be modified to provide benefits such as unlimited ammunition, immunity from damage, instant vehicle spawning, or even changes to non-player character behaviour. They can also be used to maliciously crash others' game servers, disrupting the online gaming experience for other players.

These examples illuminate the broad spectrum of options available to individuals inclined towards cheating in online games. This section offers merely a preliminary overview of the domain of game cheating software. Numerous additional tools exist beyond the examples discussed here.

Furthermore, it is also important to recognise the types of cheats that, while not directly facilitating progress or enhancing performance, are nonetheless prohibited due to their aesthetic and social value. Such cheats are coveted by players not for their utility in advancing within the game but for the prestige and distinction they offer. For example, the acquisition of rare skins serves as a signal of a player's dedication to the game. Although they do not directly influence gameplay abilities, the rarity and the inherent difficulty of obtaining these items can sometimes help mitigate suspicions of cheating. In this thesis, we do not include such aesthetic modifications as part of the scope of cheating, since they do not inherently place opponents at a competitive disadvantage.

2.2 The Players

The existing body of research thoroughly examines the motivations and perceptions of players who cheat in online games, primarily relying on qualitative methods. A recurring theme in various case studies is that cheating allows players to advance through the ranks more quickly, enabling them to achieve victory without the usual investment of time and effort (Consalvo 2007; Kücklich 2008). Encountering what they perceive as an unfair level of difficulty or periods of boredom can also increase a player's desire to progress through unconventional means. It has been observed that repetitive or familiar versions of games can incentivise players to resort to cheats to access new and unexplored game content or introduce alterations. Discovering hidden aspects or technical limitations in games can evoke positive experiences (Paay *et al.* 2018), while cheating by leveraging these elements can add an extra layer of enjoyment to an already pleasurable gaming experience (Consalvo 2007).

There are also social incentives for cheating, as it enables players to feel more in control within the game or over their opponents (Grodal 2000). Once a player has advanced through the different ranks, they can enter 'god' mode, which is considered the highest rank in games. In god mode, a player gains the ability to oversee the whole game, extending the boundaries of gameplay for further entertainment. There is a sense of pride that comes together with appearing to

be extremely skilled or omnipotent while dominating other players (N. Yee 2006a). Instead of viewing oneself as a cheater, a player only acknowledges that they are far superior to the rest of the other players without the same advantage. Such players might derive pleasure by abusing their power to literally "crush" (Pritchard 2000) or distress others (Rubin & Camm 2013).

Players may also cheat when the likelihood of getting caught is low. Game scholars have pointed to the role of identity (Sicart 2011) to explain the discrepancy of norms perceived within the virtual gaming environment and the real world. Chen and Wu (2015) argued that virtual and anonymous identities that users adopt in game platforms create an illusion that the repercussions of cheating will not be as bad online, thus making it more likely for players to attempt cheating. Their study showed that the likelihood of cheating increases with player exposure to strangers. This suggests that the transient nature of perceived player identity and the virtual environment can influence cheaters to rationalise their actions.

Novice or less skilled players can also use cheats to level the playing field, particularly useful in game servers predominantly occupied by cheating players. This was observed not only in online games (Consalvo 2007) but also in augmented reality games (Paay *et al.* 2018), where players cheated to keep up with others and to avoid feeling disadvantaged. There are other less-known reasons for cheating, such as addressing a technical issue, having emotional responses (e.g., being angry or happy) and keeping up one's "appearances" (Doherty *et al.* 2014). Keeping up with one's appearance and gaining status seemingly does not have direct connection with a player's play capability but may influence one's standing in a social network as perceived by other players.

More recent studies have incorporated socio-cognitive angles, beyond one's immediate motivations, to explain the circumstances that enable players to cheat. Dumitrica (2011) claims that when cheating is rampant, social values are used to justify the acts of cheating. Wu and Chen (2013) further demonstrate that cheating behaviour is influenced by the interplay of external and self-generated factors, which include the social environment, attitude and outcome evaluations.

Based on a series of focus groups with cheating players, Chen and Ong (2018) find that players "actively create and negotiate new meanings" of game cheating, and that this state of value creation is constantly in "flux". Their findings further support the idea that cheating players believe in the "freedom to interpret their gameplay experiences" without being bound by rules. Even when the boundaries are well-defined, employing coercive measures to deter cheating may have unintended consequences, leading players to cheat even more as a psychological response to such pressure. This phenomenon has been demonstrated in offline contexts as well (Brehm 1966). Overall, these observations suggest that a player who feels "pressured to accept a certain view or attitude" and perceives a direct threat to their freedom is likely to push back against such expectations (L. Wang *et al.* 2019).

2.3 The Community

Subcultures in games demonstrate how users with seemingly similar interests can develop unique values that diverge from the core gaming community. This phenomenon is observed in various communities, including influencers (M. R. Johnson & Woodcock 2019), civic action (Dishon & Kafai 2022), modding (Poor 2014), and cosplay (Winge 2006). Game cheating represents a niche within the broader gaming community that academia has largely overlooked. Research indicates that social connections within gaming communities play a crucial role in how players justify their cheating behaviours (Ribbens *et al.* 2011). Despite the risks of being ostracised in the wider social network, players tend to cheat if it is normalised by their immediate peers, with whom they collectively establish the rules of play and acceptable norms (V. Chen & Ong 2018; Blackburn *et al.* 2012).

The structure and unity of these social groups may be somewhat nebulous, yet there is substantial evidence pointing to distinct communities exerting influence over cheating behaviours. These communities demonstrate how players congregate beyond the oversight of game publishers to refine their cheating techniques (Pontiroli 2019; Karkallis *et al.* 2021). Security experts have observed that platforms dedicated to cheating serve as hubs for a variety of activities outside the game, such as

group discussions, messaging, and commerce (Pontiroli 2019; Kaspersky 2021). Notably, online marketplaces and forums have emerged as common spaces that reflect a keen interest in game cheating. These platforms often include specialised sections dedicated to specific cheating tools, highlighting the vibrant subculture surrounding cheating in gaming.

It is also common to find companies that operate entirely on their own, without relying on online communities or existing platforms, as they develop their own cheat products and provide related services (Pontiroli 2019; Maiberg 2014). These products and services are often promoted through dedicated channels, advertised through public search engines and discussion forums (Activision Blizzard 2021). In 2016, Easy Anti-Cheat engineers estimated the game cheating industry to be worth approximately US$100 million (Steamworks 2016). These recent observations highlight the rapidly evolving landscape of cheating, challenging the idea that cheating is solely the result of individual actions.

The study of game cheating communities can be situated within the field of CSCW, which examines online community management and collaborative work. Previous research on the formation of online communities suggests that game cheating communities emerge from a shared interest in overcoming specific challenges (e.g., countering anti-cheat measures) or attracting like-minded users. The concept of a cheating community may appear paradoxical, as its success hinges on exploiting opponents who adhere to the rules of the game. Nevertheless, existing studies have shown that players engage in games to accumulate resources, skills, and social connections (Consalvo 2007). This phenomenon can also be applicable in the context of cheating with socially playful motives but there remains a need for further understanding of what these motives entail.

2.3.1 Scoping the gaming environment

Defining the scope of online communities in online games has been challenging due to the diverse range of platforms and contexts available in the industry. Some researchers caution against considering a single server as a representative of a

specific "world" within the game, as these servers are intertwined with other social worlds, and their boundaries are constantly changing and unclear (Lehdonvirta 2010). According to Bartle in his book *Designing Virtual Worlds* (2003), a virtual world is a place "where imaginary meets the real world", suggesting that it requires both the online narrative and the physical individual. The most classic reference to the spatial concept of online games is the *magic circle*—a concept coined by Salen and Zimmerman (2003) and originally inspired by Johan Huizinga (1944) in his book *Homo Ludens*. A magic circle is a "space in which the normal rules and reality of the world are suspended and replaced by the artificial reality of a game world" (Linser *et al.* 2008). Here, certain actions considered morally questionable in other offline contexts may be tolerated as they occur within a virtual environment.

Building on the concept of the magic circle, Zwart (2009; 2014) explored games under the scope of governance: players come to gain their "own negotiated understanding of the world with which they are engaged" which is influenced by their "gaming experiences and investment in the game world" (Zwart 2009). Pargman and Jakobsson (2008) suggest adopting the idea of "frames-within-frames" when clarifying conceptual boundaries in a gaming environment. They claim that the "boundaries between the different frames are permeable and it is possible [...] to move between them effortlessly". They interpret the mental process of a player turning to cheat as a product of framing:

> What is a player doing when they are cheating in a game? [...] Where am I in relation to the magic circle when I begin to feel increasingly frustrated over being stuck in a game? [...] Am I connecting the inside of the circle to the outside? Short circuiting the circle? [...] Our answer as to what is happening is that I switch from the character frame ('I can't kill the boss') to the player/ game frame ('I have to find a game walkthrough') to the person/ ordinary-life frame ('I have to open up my web browser') and then back again after having found the answer.

The conversation surrounding boundaries suggests acknowledging the fundamental dichotomy between the real and virtual worlds. Some researchers have argued that virtual versions should stand in their own right as independent entities, instead of representing the real world (Lehdonvirta 2010). This view was agreed upon

by some even before the days of social media platforms (B. Brown & M. Bell 2004). More recently, Hamilton and colleagues (2014) expanded upon the magic circle angle on game streamers to claim that "streams afford their own special space somewhere outside that of the game's, and still separate from the rest of the world". This suggests that online social platforms can facilitate the creation of new spaces for diverse interactions and activities that are related to, yet distinct from, actual game environments.

2.4 Public Attitudes Towards Cheating

External stakeholders can substantially influence the public discourse on cheating despite not being directly involved in gameplay. Their perceptions of cheating are often shaped by personal understanding and interpretation rather than objective facts, highlighting the subjective nature of their viewpoints. Considering these perspectives can offer insights into how cheating is portrayed in public, industry, and academia, thereby helping to identify potential research gaps. In the following, we first explore the common views on cheating and then review actions taken by game publishers to address the issue.

2.4.1 Contrasting views

Arguments against cheating. Cheating is commonly regarded as an unacceptable form of behaviour in public settings that undermines the integrity of a product or an organisation. This is especially pertinent in competitive sports, including traditional and gaming contexts, where individuals have often attempted to bend or break rules to gain an advantage. In online games, even professional players have been caught attempting to gain an unfair advantage, compromising the integrity of the competition (BBC 2020). While cheating is penalised according to the explicit rules set by game organisers, it carries deeper implications related to the fundamental morality and ethics of sportsmanship.

According to Caillois in *Man, Play, and Games* (2001), games in which the players do not abide by the rules defeat the purpose of playing the game. He

summarises: "The game has no other but an intrinsic meaning. [...] Its rules are imperative and absolute, beyond discussion. There is no reason for their being as they are, rather than otherwise. Whoever does not accept them as such must deem them manifest folly". Kimppa and Bisset (2005) consider cheating a moral offence, and they align their perspective with three ethical viewpoints: 1) cheating pursues one's happiness at the cost of another player's ability to pursue their own, 2) cheating treats other players as means to one's satisfaction rather than as ends in themselves (i.e., as facilitators of cheating rather than as subjects to play against), and 3) cheating threatens to undermine the intended play value of a game. Their analysis sheds light on how cheaters' deliberate actions violate the rights of various stakeholders in games, including developers[1] (U.S. District Court 2021; U.S. District Court 2016; U.S. District Court 2017).

Cheating influences the virtual world of gaming by disrupting its foundational principles and diminishing the gameplay experience for players who follow the rules. It devalues the items or abilities legitimately acquired, as cheating allows others to gain an unfair advantage, distorting the original scarcity value of in-game assets on the platform. Thus, players who are continuously disadvantaged and feel that the problems are not addressed will withdraw from the game as a result (Irdeto 2018). This has a direct negative impact on the success, reputation, and revenue of the game providers.

Some game developers argue that manipulating game mechanics can undermine their creative value, disrupting their professional morale and dedication (Davis & Price 2008). As a result, cheating also involves its own share of legal issues, including unauthorised copyright infringements and violations of laws pertaining to digital rights management (U.S. District Court 2010; U.S. District Court 2016; U.S. District Court 1998). The legal cases in the past have varied from tutorials in cheating (BBC 2017) and in-game financial trading (Pasick 2007) to virtual property theft (Cavalli 2008), among others. The activities all share the common characteristic of occurring outside the controlled environment of a game publisher.

[1]However, due to the complex and confidential nature of company data, researchers cannot independently verify the reported financial impacts.

In certain countries, cheating in online games is considered illegal, and previously offenders have been subject to jail time of up to 5 years (Humphries 2016).

Arguments for cheating. Scholars have also highlighted the positive aspects of cheating in games. Consalvo (2005) emphasised how cheating can be a means of sharing experiences with others facing different challenges in the game through guides and walkthroughs, creating a more meaningful experience beyond simply following instructions. The argument is inspired by the game designer Scott Miller (2004), who claimed that difficulties faced in online games by players are the fault of the design, not the player and their supposed lack of competency. Thus, experienced players who possess technical skills can derive more enjoyment in games geared towards novices (Dumitrica 2011), granting them greater control over their specific areas of interest. The historical use of cheat codes also highlights a positive aspect of cheating in games. In the past, game developers intentionally incorporated cheat codes—sometimes referred to as Easter eggs—to enhance accessibility and entertainment value for players (Consalvo 2009). These cheat codes were first introduced in 1985 when a developer at Konami inserted additional codes to ease debugging as the game was initially too challenging for them. The game's unexpected release with the code intact resulted in its widespread popularity, and the company embraced the positive response by officially endorsing the cheat code as a feature. This comes to demonstrate how certain forms of cheating can enhance the overall gaming experience for players.

Furthermore, cheating can serve an altruistic purpose, empowering disabled individuals to play games at their own pace and enjoy the experience. As exemplified by Eric Heijnen, the creator of a renowned application Cheat Engine, the "favorite feature seems to be the speedhack so they can slow down the game at key points so they have time to react" (Silverberg 2020).

Game cheating can also provide a space for honing creative problem-solving skills, without facing the ethical consequences of real life (Hamlen & Blumberg 2015). It can spur innovation by encouraging players to customise the mechanics to

better suit their needs. When tolerated by game providers, such practices can, as one scholar noted, "transcend the category of cheating" to become "an art form" and even a form of "civil engineering" (Dibbell 2007). A similar concept is *modding*, which changes a game mechanic by using tools or 'mods' not originally part of the game for fixing bugs or building on limited content (Poor 2014). Mods of some of the most popular games on the market today were once derivatives of existing games, which comes to show how they can be executed and even commercialised in harmony with game developers (Donnelly 2016; Curtis *et al.* 2022). Thus, as online games ultimately aim to provide positive experiences, one can argue that both cheating and modding should be justified for conveying the fun that the publisher has failed to deliver in practice. This is reflected in some players' views, arguing that cheating indicates one's "freedom" to play and pleasure (L. Wang *et al.* 2019). Certain scholars in related domains also support this perspective, drawing parallels to the controversial debate over the use of drugs in physical sports. Savulescu et al. (2004) question whether the use of drugs truly violates the "spirit of sport", which encompasses values such as entertainment and teamwork. They argue that the rules limit the potentially creative capacities of athletes and suggest that if drug use were allowed, it would technically still constitute a "good" sport, albeit being classified as a different type of sport.

In their investigation of online fitness games, Gal-Oz and Zuckerman (2015) argue that cheating could be viewed as acceptable if it provides transferable benefits. Cheating, in this context, can offer opportunities for amateur users to enhance their programming skills and knowledge of computer systems. The process of creating stealthy cheat tools often requires an understanding of computer resources, prompting users to delve into the low-level architecture and explore ways to reverse-engineer systems. For minors who cheat in games, the technical knowledge gained through this process could be valuable for their future career prospects, particularly in fields such as cyber security. This aligns with the perspective of the UK National Crime Agency (NCA), which emphasises educating minors to make ethical choices,

and underscores the potential benefits of directing their interest in cheating towards legal avenues (NCCU 2017).

2.4.2 Anti-cheating

To deter cheating on the platforms, game companies have long contemplated ways to keep other players satisfied. The term 'anti-cheating' refers to the implementation of measures by game companies to mitigate cheating behaviours within their games. Oftentimes, anti-cheat software is embedded in games as a way to seamlessly keep out cheating attempts while preserving the play experience. Game companies have been seen engaging in collaborations with independent entities specialising in anti-cheating software (e.g., Easy Anti-Cheat and BattlEye) or cyber security services (Kaspersky 2021). There has also been a notable surge in security research of cheating within academia in the form of malware analysis (Karkallis *et al.* 2021), analysis of attack infrastructure (Karami & McCoy 2013), and threat modelling (G. Yee *et al.* 2006).

Anti-cheat software traditionally works in user mode by analysing files containing the codes, and scanning the client memory. They also actively collect in-game user reports from the game itself. Companies have invested in software and protection of the memory data and network, as well as behaviour analysis of the players to detect anomalies to discern whether a player is a bot or not. More recently, anti-cheat development has focused more on kernel drivers, which contain code that can access all resources on the computer at a higher privilege level (St. John & Guigo 2015; Noguera 2019). However, these initiatives come with their own set of problems, raising alarms over false positives and privacy violations. These concerns are further compounded by the fundamental weakness that such solutions are implemented on systems where the attacker has full control (Park *et al.* 2020).

It is worth noting that, even without cheating in question, online games have been subject to various security threats. In 2011, Kaspersky (2008) reported that East Asian countries popular for online games are attractive targets for virus writers, as cheating players from these regions often lack interest in the origins of their acquired cheat software, focusing instead on their functionality. This indifference

fosters an environment conducive to malicious activities, encouraging unauthorised users to develop codes that can compromise and exploit the online assets of others. Security researchers have also found that the "overwhelming" majority of websites targeted by on-demand DDoS services were either game servers or forums, revealing that many were advertised as "network stress testing services" to maintain a facade of legitimacy (Karami & McCoy 2013).

Beyond technical approaches, anti-cheat teams are increasingly recognising the importance of community engagement to understand the broader spectrum of cheating. Phillip Koskinas, a former cheat developer who is now an anti-cheat lead at Riot Games, shared at a recent panel talk (2021):

> "I like what you said about community. Because that's something a lot of people miss—that cheaters are barely passionate. Like they are players too. You can try to remove them from the ecosystem but they are [still] players [...]. They're very passionate about the space and they are willing to work together. They're not gonna give up just because of a couple of bans, especially when their friends continue to be motivated to do it [...]. It's like an opposing team. It's not just one person you're trying to deter. They work together in similar ways we do".

While some industry reports have highlighted the proactive role of online communities in cheating (Pontiroli 2019), it is only of late that academic researchers have started to leverage online forums to gain insights into the threats and risks tied to the tools found within these platforms.

Previous research has explored the use of game cheating forums as data sources for developing machine learning classifiers capable of identifying malicious tools that access victim processes (Karkallis *et al.* 2021), as well as leveraging forum discussions and user reports to evaluate the effectiveness of aimbot detectors (Liu *et al.* 2017). Despite these initiatives, the body of research in this domain remains limited, highlighting the need for further research to advance our understanding.

Once cheating is detected, gaming platforms typically impose penalties such as warnings and bans on the implicated players. However, some companies are exploring alternatives to these measures. For example, Activision has implemented a new measure designed to empower players who follow the rules by granting them a

mode of enhanced capabilities, thereby neutralising the cheater's ability to directly harm others (Ricochet 2022). Company reports indicating a decline in instances of cheating since the rollout demonstrate that reducing the value of advantages gained through cheating is indeed an effective way to discourage the behaviour.

2.5 Research Gaps and Opportunities

Following a comprehensive review of the existing work on game cheating, we are now able to identify gaps and opportunities for future research in this field. Most of the available research on cheating is predominantly tied to the individual perspective, exploring aspects such as the motivations of cheaters and victims. This approach has provided insights into how certain players, particularly those experiencing struggle or boredom, might succumb to the allure of the easy rewards that cheating provides. Although such cases have enhanced our understanding of the dynamics of cheating, the scope remains predominantly confined to the gaming environment, particularly given the external platforms often recognised by the anti-cheating sector. Preliminary investigations into cheating forums reveal that cheating strategies have evolved in intriguing ways, extending far beyond the confines of gaming platforms. Meanwhile, their potential social ramifications remain largely underexplored in academia.

When starting the investigation as an external observer with limited information, adopting a pre-established theory of governance can be valuable for exploring online communities, as it provides a reliable framework for understanding how organising structures collaborate towards shared goals (Ostrom 1990; Kooiman 2003). Approaches grounded in community perspectives, such as those surveying dedicated discussion forums and chat groups, have proven effective in revealing insights into the fundamental practices and values, indicating their usefulness in examining contexts of cheating. We therefore conclude that a community-based study of cheating can yield valuable insights, revealing social repercussions that reach beyond the gaming industry itself. This insight is key for pinpointing areas requiring intervention and determining which sectors should take a more active role.

Our research into the cheating community begins by employing an integrated methodological approach aptly aligned with the exploratory nature of this investigation (Section 3.2.2). The findings are subsequently organised to highlight their relationships, as follows: First, we explore the social values tied to cheating in games to spotlight their fundamental role in spurring meaningful social interactions (Chapter 4). Second, we delve into the community roles and conditions that foster dedicated involvement and value creation related to cheating (Chapter 5). Building on these insights, we examine how the relevant resources and networks are governed, especially in the face of external threats that counteract their efforts to cheat (Chapter 6). Through this inquiry, we gain a clearer perspective on the development of cheating as a community-driven phenomenon beyond the conventional boundaries of gaming (Section 7.4). Finally, this insight is applied to identify critical areas requiring attention by the authorities and industry players, and to propose recommended interventions for these areas (Section 7.6–7.7).

2.5.1 Further considerations: contextualising the relevance of cyber security

There is an additional dimension to cheating that warrants consideration together with the community aspect. The literature from both industry and academia highlights the distinct role of cyber security in many of the mechanisms that underpin cheating. Existing anti-cheating strategies mirror typical cyber security defence procedures, aimed at deterring the malware-like nature of the software attempting to undermine the core gaming infrastructures. Integrating these factors into community dynamics invites questions about the ramifications of fostering such capabilities within a space without external oversight.

Within the context of our community-focused investigation, we address this knowledge gap by: 1) identifying the diverse activities and roles within the cheating ecosystem, highlighting those that carry particularly serious legal implications, and 2) offering guidance on suitable interventions designed to mitigate the harmful impact on individuals, and protecting those who become victims as a result of these

practices (see Sections 5.5.1 and 7.6, respectively). Furthermore, in Section 8.3, we outline the two spin-off studies that emerged from our research findings: 1) an in-depth examination of the cyber threats used to facilitate toxic behaviours within cheating communities, and 2) an exploration of the conceptual parallels between cheating and cybercrime (see Sections 8.3.1 and 8.3.2, respectively).

2.6 Summary

Research on cheating in games has historically focused on individual factors, such as player motivations, in isolation from the broader social dynamics. This literature review reveals diverse and often conflicting perspectives on cheating, revealing a lack of consensus on how it should be conceptualised. These diverging perspectives, coupled with an incomplete understanding of how cheating manifests in practice, contribute to an ongoing ambiguity about the true nature of game cheating. Studies of online communities suggest that adopting a community-centric rather than an individual perspective can yield valuable insights into nuanced player values and practices that might otherwise be overlooked. Building on this insight, this thesis explores the community dimensions of cheating to better understand its social foundations and implications.

3 Methodology

Contents

This chapter outlines the strategy used to achieve the objectives of the research. We first outline the research philosophy and approach for undertaking the studies in the thesis, then present the methods for data collection and analysis. This chapter corresponds to the Methodology sections in Chapter 4, 5, 6, and 7.

For clarity, this thesis uses the singular 'they' pronoun to refer to research participants to avoid gender-specific language. Additionally, the terms 'interviewer', 'author', and 'researcher' are used interchangeably to refer to the same thesis author, with the specific term chosen according to the context.

3.1 Research Philosophy

Research philosophy underpins the foundational assumptions about a research topic, and is instrumental in shaping the choice of methodology (Holden & Lynch 2004). The two prevalent perspectives adopted in research are ontology, which delves into the nature of what exists, and epistemology, which focuses on the nature of what can be known (Guba & Lincoln 1994).

In ontological research, the foundational understanding of the existence of a given object directly shapes the structure of the data. There are two stances to consider in ontology: objectivism and constructivism. Objectivists claim phenomena and their meanings exist beyond individual perceptions, alluding to a singular, objective reality (Rand 1964). On the other hand, constructivists believe that meanings are co-created and interpreted by individuals, asserting that truth is inherently subjective (Harlow *et al.* 2007). When we speak of constructivist research, it typically leans on qualitative methods, such as interviews and ethnographic studies. Here, participants are not simply passive subjects to be observed but those who evolve and influence the research process. Together with the researcher's existing knowledge, these experiences and observations are interpreted to forge new insights.

In a domain where academic literature is sparse and clouded by moral debates over the very essence of cheating, the ontological perspective is not just relevant but

essential in grasping the fundamental complexities inherent to game cheating. By adopting a constructivist stance, we can delve deeper into the variant interpretations and meanings ascribed by individuals within the cheating community, enabling a richer understanding of the socio-cultural dynamics that underpin cheating.

3.2 Research Approach

3.2.1 Qualitative research

Qualitative research offers a way to capture the nuanced details of social interactions, encompassing concepts, perceptions, and lived experiences, in line with the objective of this research (Flick 1999). While quantitative strategies can also yield substantial insights, particularly from vast online datasets, the current stage of the inquiry deemed it premature to formulate a precise hypothesis suitable for quantitative testing. Employing this approach at this stage might inadvertently lead to confirmation biases against game cheating or overlook critical considerations. In the initial phase of the research, we assessed various data collection techniques, such as scraping public forums and using computational simulation models, for potential quantitative studies. However, we identified significant uncertainties regarding the nature and accessibility of these communities. Given these uncertainties and the intricacies inherent surrounding game cheating, we found the qualitative approach most fitting for this foundational research. This approach can form the groundwork for a potentially larger-scale quantitative study in the future (Tashakkori *et al.* 1998).

3.2.2 Abductive reasoning in exploratory research

Exploratory research is instrumental in identifying new phenomena, and illuminating previously uncharted territories. In areas with limited prior knowledge, this approach offers invaluable preliminary insights that set the stage for more targeted investigations. The thesis adopts an abductive approach to align with this exploratory nature, as reflected in the central research question ("*How are game cheating communities established, reinforced, and governed?*"). While the primary focus of the question is on understanding the processes and structures behind these

communities, it also embraces a descriptive nature through its implicit question of 'what' or 'in what ways', to gain a more rich and holistic description of the dynamics that define these communities. Qualitative research with an exploratory angle is commonly associated with inductive reasoning as it first invites observations and interpretations as a basis for broader themes. Yet, it is important to recognise that other approaches can influence research outcomes, particularly when seeking richer descriptive insights to aid the exploration process.

Abductive reasoning resonates with the idea that qualitative work involves an ongoing reflection of the data against different theories to enrich and develop the research questions further. The view was introduced by philosopher C. S. Peirce (1934, 1932), who initially applied the theory of inference to support the development of grounded theory. Over the years, the approach has been more widely applied to facilitate academic inquiries in fields that are socially complex or underexplored, as it guides scholars with a framework that encourages deeper exploration of the observed phenomena (G. Thomas 2010; Yin 1999; Timmermans & Tavory 2012). While the deductive approach emphasises theory verification and the inductive approach focuses on theory construction, abduction offers an alternative mode of reasoning (Haig 2018). In this approach, hypotheses emerge from specific inferences, either suggesting the potential for a new theory or refining an existing one to provide the most plausible explanation for a set of observations (Kovács & Spens 2005).

The abductive reasoning approach we adopted is illustrated through the following steps. Figure 3.1 offers a schematic representation of these steps.

1. The guiding elements from the preliminary pilot study combined with the existing literature were used to explore suitable frameworks that could be used to establish the preliminary research question.
2. We adopted governance as an initial theoretical framework to explore and gather foundational insights about cheating communities (Chapter 6). Ostrom's commons management principles were chosen as the initial theoretical framework due to their extensive record of application across various academic works in both online and offline community resource management. The

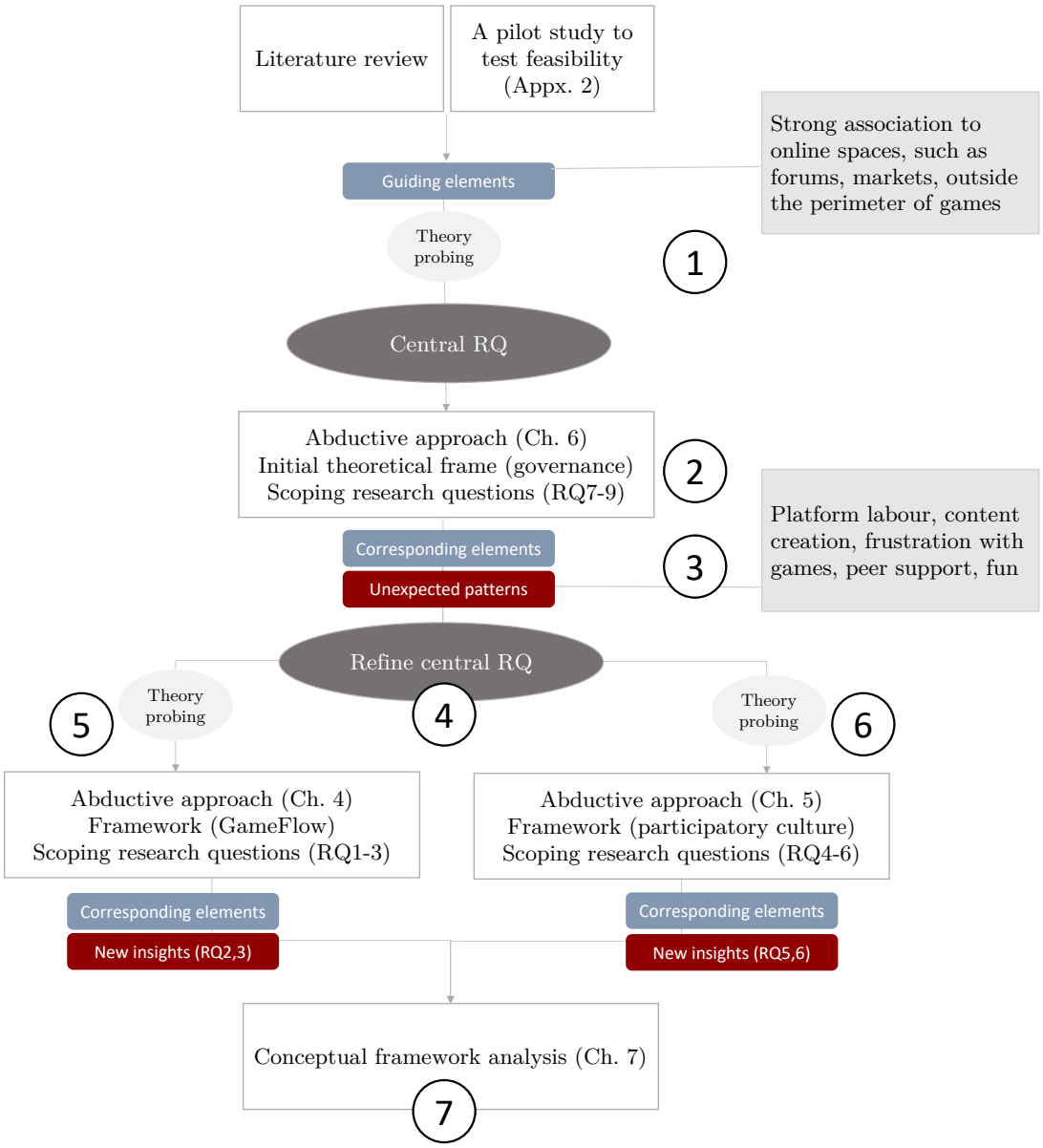

Figure 3.1: An overview of the steps employed using abductive reasoning.

theoretical propositions put forward by our initial framework informed the study design, serving as guiding principles, rather than tools for theory verification. The initial observations concentrated on aligning with themes intrinsic to the theory: 1) shared resource, 2) authority, 3) rules enforcement, and 4) communication and interaction. We were simultaneously open to emergent themes and any unforeseen patterns deviating from this anticipated path.

3. We arranged the predefined themes alongside the emergent codes (e.g., labelling 'platform types' as a distinct form of code that does not fall under the governance themes outlined in the codebook). Both the raw data and the codes were iteratively reviewed to refine the overall organisation. The resulting codes are presented in Section 6.3.2. Upon completing the analysis underpinned by the governance framework, plausible inferences were drawn from the emergent codes (e.g., platforms significantly impact how users engage with cheating communities, with each providing distinct features, such as opportunities for learning new tactics or becoming part of an exclusive social circle). Upon background reviews into the abstract concepts underlying these emergent ideas, existing theoretical frameworks were illuminated, offering potential explanations for the phenomena observed: 1) participatory culture for communities of practice, and 2) play experience as a way to understand early stages of social engagement.
4. The central research question was subsequently refined to address the emergence of these themes within the main research objective: exploring the social structures and practices within the cheating community.
5. The identified theory of participatory culture was then adopted to guide the design of the subsequent studies and the sub-questions (Section 5.1). As in the earlier Step 2, this second round of analysis aimed to pinpoint themes corresponding to the established theoretical propositions while remaining open to identifying emergent themes. This phase of our study delved into the structural aspects of cheating, covering dedicated practices and the characteristics of social platforms in facilitating these activities. The resulting codes are presented in Section 5.3.2.
6. Having explored these elements, we then returned to the other theoretical framework identified in Step 3, to examine the other dimension of the environment as the third phase of our research—within the games themselves where the act of cheating occurs. We introduced new sub-questions that utilise the principles of play experience to explore the values signifying meaningful interactions in games, with a focus on social interactions. Additionally,

this phase shed light on cheating players' perspectives regarding certain game publishers, revealing that their dissatisfaction closely aligns with their enthusiasm for game cheating. The resulting codes for the final analysis are found in Section 4.3.2.

7. After addressing the core elements of our central research questions, we re-assembled the data alongside the existing literature. We applied conceptual framework analysis to provide a comprehensive understanding of the subject according to different forms of collectives observed in the cheating ecosystem (Chapter 7).

The iterative process in this mode of inference allowed the initial theoretical assumptions to evolve over time, elevating the research beyond a purely deductive angle. This final phase also underscores the adaptability of the abductive approach in combining existing theories and contextually situated observations to derive novel patterns and insights.

3.3 Data Collection

In this section, we review the methods used in our studies from Chapter 4 to 7. We first describe the choices for case selection, including their justifications, and describe the data collection methods incorporated in the studies.

3.3.1 Case selection

Choice of games

Our research predominantly centred on the cheating and modding communities of *Counter-Strike: Global Offensive* (2014) and *Grand Theft Auto V Online* (2013). Several factors indicate their fit for research in game cheating. First, both *CS:GO* and *GTA V* have maintained massive, dedicated, and international player bases for years, providing a representative sample for investigating cheating dynamics on a global scale. The longevity of these games suggests that cheating players have continually adapted to new cheating methods, making them ideal cases for investigating the nuances of the associated behaviours over time. Second, there is a

vast range of non-overlapping cheats in both games—from aimbots and wallhacks in *CS:GO* to 'money' glitches and 'mod menus' in *GTA V Online*—embodying various activities that are unauthorised across two popular game genres. Third, the prominent role that FPS games such as *CS:GO* play in the eSports industry highlights the far-reaching implications of cheating in these high-stakes environments (BBC 2020). Last but not least, the two games exhibit strong community engagement in forums, such as Reddit, providing rich qualitative data fitting for the community-centric context of the thesis. Overall, the sheer scale of their user base fosters a diversity of interactions, providing valuable opportunities to advance our research objectives concerning intrasocial dynamics.

In assessing available games and game genres, we determined that concentrating on these cases optimally aligned with our research objectives, simultaneously ensuring both validity and representation. The assessment was guided by three criteria:

1. We initially identified the most commercially successful competitive video game genres, which included Real time strategy (RTS), Multiplayer online battle arena (MOBA), Massive multiplayer online role-playing game (MMORPG), Role-playing game (RPG), and open world. While RTS games such as *StarCraft* (1998) once boasted a strong competitive scene, the gaming industry has since seen shifts in player preferences, rendering them potentially less representative of contemporary gaming trends at the time of writing.
2. The emphasis was then shifted to understanding the relationship between the competitive essence of a game and its notion of cheating. Some MMORPG games such as *EVE Online* (2003) do manifest 'cheats', yet in the form of espionage and sabotage which stray afar from the typical notions of game cheating; they are in many ways an accepted part of the game here, blurring the line between cheating and typical play strategies. Similarly, many RPGs, such as *Guild Wars 2* (2012) and *Final Fantasy XIV* (2013), focus predominantly on narrative progression by a single player, which does not elicit the same implications of cheating as seen in high-stakes competitive environments. The varied interpretations of 'cheating' combined with the individual nature of the

gameplay indicates that these game genres would not align optimally with the focus of this thesis. However, some RPGs, such as *Dark Souls* (2016), still offer options to connect with other players for a shared experience.

3. The prevalence of cheating in a competitive game does not necessarily render it suitable for academic investigation if there is an absence of an active community or if the data remains inaccessible to the researcher. Notably, while *Dota 2* (2013) and *League of Legends* (2009) are recognised as leading MOBA games globally, efforts to access their associated communities have been met with significant obstacles. As detailed in Section 4.3.1, it was observed that communities focused on cheating, tailored for specific games, exhibit varying levels of activity. This resulted in challenges in accessing a relevant population for certain communities, while others proved more approachable. As a result, games with inaccessible data were excluded, leading to the selection of *CS:GO* (FPS) and *GTA V Online* (action adventure) for our empirical work.

While our study primarily focused on two selected games, the data collection phase encompassed transferable insights from alternative games, as detailed in Section 4.3, providing deeper insights into the contexts and experiences associated with unauthorised activities in gaming.

Counter-Strike: Global Offensive *CS:GO* is an FPS video game launched by Valve in 2014. Even though it was released almost a decade ago, *CS:GO* remains incredibly popular today, boasting various versions of the game (Rambusch *et al.* 2007). In 2020, the game had over 24 million monthly active users, and reached one million concurrent players, according to official Steam reports (Statista 2020; Yin-Poole 2020). Cheating is notoriously rampant in *CS:GO*. In 2018, over 600,000 accounts were reported to be banned from the game in December alone (Boudreau 2018). The statistics and announcements by Valve validate the claim that combatting cheating is an ongoing issue within the company.

Cheating in *CS:GO* commonly involves the use of unauthorised software to manipulate game mechanics, allowing players to control their characters and aim in

specific ways to maximise rewards. Common examples include aimbots (automating target acquisition for the player), triggerbots (automating shooting) and wall hacks (ability to see through solid objects or manipulate textures). We provide examples of cheats widely seen in competitive multiplayer games in Section 2.1.3.

Grant Theft Auto V: Online *GTA V* is the latest entry in the action-adventure series of the *GTA* franchise published by Rockstar Games in 2013. Although it has been a decade since its release, the game remains hugely relevant today as one of the most popular video games of all time, similar to *CS:GO*. It sold 20 million copies in 2020 alone, and 175 million worldwide as of February 2023 (Statista 2023). *GTA V* was originally released as a single-player mode but Rockstar released an online multiplayer mode named *GTA V Online* soon after, which has since maintained its popularity over the years. *GTA V Online* allows up to 30 players to engage in the game in a cooperative or competitive mode. A recent peak count recorded 267,000 concurrent players in February 2020, and the game generated US$985 million in 2021 solely through in-game transactions (Grubb 2021).

Cheating and unauthorised modding are rampant in *GTA V Online*, and Rockstar has been vocal in enforcing punishments for the cheaters in recent years. In addition to banning cheaters from the platform, efforts also focused on rendering ill-gotten gains worthless to restore the value of legitimate items, and even included shutting down the entire platform to eliminate counterfeit in-game currency from its economy (Moore 2020; Hooton 2014).

In *GTA V Online*, cheating and modding are enabled through a user interface known as a mod menu. After the game loads, players can activate the mod menu using an injector—a separate program that inserts custom code into the game—and a specific key combination, allowing the menu to appear over the native game interface. The menu offers various options, such as teleportation, wall hacks, and god modes, among others.

Choice of platforms

Studies in games have shown how online forums could offer "a window onto underlying cultural logics and anxieties from within gamer culture" (Ruberg *et al.* 2019). Gaming culture extends beyond the boundaries of gameplay, thriving across numerous online forums and servers—this is no exception to the subgenre of game *cheating*. For recruitment purposes, platforms were considered based on the literature review of academic and industry reports, news, blogs, and the author's situated knowledge on game cheating.

Dubbed the "front page of the Internet", Reddit has attracted many researchers for qualitative and quantitative analysis of online communities with rich data source it makes available (Massanari 2017; Matias 2019; Musabirov *et al.* 2017; Allison *et al.* 2019; Ruberg *et al.* 2019). In January 2020, Reddit had over 100,000 sub-reddits and over 50 billion monthly views. A subreddit dedicated to cheating in *CS:GO* (*r/csgohacks*) had over 15,000 subscribed users in January 2021, while the subreddit for *GTA V* (*r/GTA5Modding*) boasted over 63,474 users in August 2022. Given the sheer magnitude of the user base and the ease of obtaining a representative sample, we legitimised the use of Reddit for our main platform of recruitment.

3.3.2 Interview

The thesis predominantly relies on semi-structured interviews to gather data about the game cheating community, and subsequently adopts other methods as a way to enrich the insights. Semi-structured interviews facilitate direct reciprocity between the interviewer and the participant, enabling a follow-up on new observations and providing flexibility in participants' expressions and thoughts (Dearnley 2005). This allows new discussion points and concepts to emerge organically in which strictly structured interviews would not be applicable. In our studies, the researcher sought to gather participant knowledge, insights, attitudes, and experiences about the game cheating community. The one-on-one interaction with participants also enables the researcher to observe their character, which becomes part of the data. The research questions were framed and communicated based on the researcher's

existing knowledge, including academic papers, blogs, tutorials, news, and their personal experience in online games.

We considered a number of qualitative methods in the planning of the studies, including surveys, digital ethnography, and participant observation. However, we decided that interviews were the most appropriate given the exploratory nature of our research. Surveys are a cost-effective method to gather a large number of responses and a broad range of data but there are a number of issues that do not always make it suitable. For instance, respondents may not feel incentivised to provide accurate or honest answers, or may not be aware themselves the reason for their own answers, especially if they are engaging out of boredom. Close-ended responses can also be difficult to validate, especially within game cheating communities that are saturated with specialised jargon and acronyms. Moreover, there have also been frequent instances of trolling and griefing further complicating interpretation, making it challenging for researchers to discern the genuine meaning of the content without risking misinterpretation.

Digital ethnography offers researchers a valuable opportunity to gain first-hand insights into the behaviours and interactions of participants. However, practical challenges can make this approach less feasible in this domain. These challenges include the difficulty of identifying and accessing relevant platforms and servers, as well as the need to familiarise oneself with the specific jargon and slang associated with cheating in games. Additionally, the process of integrating into the cheating community and internalising the observed information and interactions can be time-consuming. This view is also evidenced through our research findings, which indicate that participants in our studies typically invested a minimum of 0.5 to 2 years in building relationships and comprehending the discourse within the cheating community.

It is also important to consider the challenges of ensuring researcher protection during the study. There is a risk of being targeted by negative and harmful behaviours from participants who perceive the researcher as an outsider to the community. Even if the researcher is not actively engaged in playing the game,

being present in the game-related space (e.g., forums) can pose risks of negative and harmful behaviours from participants who may view the researcher as an outsider to the community. The risk was evident during and after the first round of interviews in the thesis, despite efforts to minimise harm to the researcher. In light of these challenges, we determined that one-on-one interviews represented the most effective means of obtaining the data necessary to address our research questions, as they provide researchers with the opportunity to clarify expectations.

Data were collected in various forms due to the online and interactive nature of the interviews. The participants were able to communicate either via audio or text, or both, and some opted to send links before or after the interview to complement the topic discussed. The final set of data consisted of text, audio, image (screenshots and photos shared), video, and GIF formats. To maintain consistency in the responses and coding of the data, the contents of non-textual data, such as GIFs, were noted down in text before being coded. Memos were recorded for each participant, capturing the interview atmosphere and pertinent observations about the individual. This approach allowed the researcher to more clearly recall and analyse each participant interaction.

Sampling methods

Our research is suitable for non-probability sampling as the target population is considered hard-to-reach, and not every member has an equal chance of being invited to participate. This is due to the practical challenge of estimating the precise population of cheaters, which spans different games, versions, and languages. Qualitative research on game cheating, to date, has relied on methodologies that might not capture the full spectrum of the cheating population. These studies source participants predominantly from mainstream gaming communities (V. Chen & Ong 2018) or general student populations (Consalvo 2007; Wu & V. Chen 2013), with the underlying assumption that participants would candidly acknowledge their cheating behaviours. In many contexts, the subject of game cheating is

regarded as controversial, which makes it challenging to obtain authentic feedback from participants at the outset.

In the preliminary stages of our research, we conducted a pilot interview study, which illuminated similar challenges. Using a convenience sampling method, we aimed to evaluate the feasibility of obtaining data on cheating behaviours among young adults—a demographic frequently examined in video game research (Przybylski & Weinstein 2017). However, obtaining genuine admissions of cheating from participants was challenging, as was finding participants with the relevant experience. This was potentially exacerbated by the fact that the participants' online identities were already known to the researcher, which might have influenced the nature of their responses. Overall, the data collection process focused on characterising cheating under different circumstances, which made it challenging to reach a unified conclusion regarding its implications for the community (see Appendix B for further details).

Following this, we chose to engage with an environment in which the typical user is either likely to be a cheater or at least expresses an interest in cheating. This approach proved especially valuable in clarifying the inclusion criteria for potential participants, allowing them to determine their willingness and suitability to engage with the research. In this way, rather than being directly approached, participants could openly discuss their experiences with cheating, creating a mutually accepting environment from the beginning.

We adopted two sampling methods for the studies: purposive sampling and snowball sampling. Purposive sampling enables the researcher to find the appropriate audience for the scope of the research (Patton 2002). Previous studies have shown how Internet-based purposive sampling increases the chance of obtaining a desired representative sample for research (Temple & R. F. Brown 2011; Thornton *et al.* 2016). In our case, advertisements were initially used in targeted public forums dedicated to cheating. They were initially used to begin participant recruitment with snowball sampling in mind as a follow-up method, providing an accessible and effective way to recruit populations. This approach proves especially beneficial in

studies where in-depth experience or knowledge is crucial. Previous studies have demonstrated that social media platforms, including Reddit, Facebook, and Twitter, are among the most popular choices for conducting research of this nature (Hwang & Foote 2021; Massanari 2017; Rieger *et al.* 2021; Jessa Lingel & Golub 2015; Stewart *et al.* 2017). Reddit, for instance, displays a list of moderators and shows their post history, which can be used to deduce the most active moderators. *Subreddits*, Reddit's subsidiary channels, also offer a way to sort the posts from most recent, controversial, and popular, allowing the researcher to identify the most active users.

As part of the purposive sampling process in this thesis, the researcher could organically scope the participants based on a specific game by accessing dedicated forums. The recruitment process was shaped by the content structure of the forums, where visibility depended on user interface elements such as view counts, upvotes, and the number of comments. Similarly, the means by which participants expressed interest varied across platforms, with individuals typically responding to a thread, sending a direct message, or contacting the researcher via email.

Snowball sampling is one of the most popular methods used in qualitative research, which relies on chain referrals to expand the sample size gradually. Initially, the advertisements provided a few contacts who met the inclusion criteria. These contacts, in turn, referred their friends or acquaintances who also met the criteria, leading to more participants. Having a friend who had already participated in the interviews seemed to reduce the barrier to entry, as participants were more comfortable and open about their experiences during the interviews. Throughout the study, some participants expressed skepticism about the legitimacy of the interviews.

Mode of the interview

Aside from the pilot study, all interviews for this research were conducted online, leveraging the discussion platform Reddit and instant messaging platform Discord. Discord is a widely used platform that offers voice, video, and text features for group chat purposes, and is one of the most popular ways that game players communicate online at the time of this research. The messaging systems of both platforms

allowed us to connect directly with participants in an environment familiar to them. Despite meeting for the first time in an anonymous setting, this familiarity facilitated rapport during the interviews and streamlined communication between the prospective participants and the researcher. This approach contrasted with the offline interviews (Appendix B), where finding willing participants with relevant experience was far more challenging. The sense of ease observed during offline interviews arose from the researcher's prior familiarity with the participants. In contrast, fostering a similar level of openness among those recruited through online platforms without the benefit of anonymity would have been considerably more challenging. Further, the informal nature of the online interview environment also meant that participants perceived less pressure to be fully engaged. Most online interviews were conducted synchronously, with a subset carried out asynchronously due to time zone differences.

3.3.3 Observational study

The thesis also incorporated observational studies of gameplay videos and online cheat product advertisements, complementing the interview data. While interviews provide direct insights from individuals, observational studies offer a chance to capture fine details of a phenomenon in a more natural setting (Basil 2011), and can provide more context to the sentiments expressed during interviews. Notably, YouTube gameplay videos often come with commentaries and community reactions in the form of likes and comments, offering a window into community norms and general attitudes surrounding certain practices.

More importantly, these complementary studies help validate the findings derived from the interviews. Observational studies of gameplay videos and advertisements encompass a vast number of instances, players, and cheat products given their accessible nature, expanding the studies beyond the primary case selections, and increasing external validity (Table 4.2 in Ch. 4 provides an overview of the data collected across different games).

Public videos

Videos are particularly relevant in the context of interactive entertainment technologies, enriching one's understanding of ideas beyond verbal and textual forms of communication. The observational approach in videos allows researchers to obtain a pre-recorded snapshot of specific characteristics which might otherwise go missing in a retrospective type of data collection. In Chapter 4, we carried out observational research of publicly available videos about cheating in online multiplayer games. Overall, the process both helped cement knowledge about the domain for the researcher, and also enriched the understanding of how specific cheats were discovered, used, or viewed by the players. We expand on the steps taken for sampling in Section 4.3.

The videos were accessed via YouTube, one of the most widely used sources of social media data. Through publicly shared videos, YouTube enables viewers to directly engage with others' experiences and perceptions. Its accessibility allows viewers to learn from and experience the challenges encountered by original creators, while enabling content creators to explore and educate users on hard-to-reach domains. Unauthorised cheating methods are inherently covert, operating outside the rules to evade corporate detection systems. This creates practical barriers for researchers as external observers as well. YouTube addresses this challenge by granting access to relevant content and, in certain cases, facilitating direct engagement with users possessing domain-specific expertise (Kaufmann & Tzanetakis 2020). The contents are particularly valuable for revealing novel insights that have not emerged through interviews.

Online advertisements

Advertisements are frequently used to study user behaviours due to their multi-dimensional properties—ranging from linguistic to auditory and visual elements, offering insights into how users interpret meanings (G. Cook 1992). Despite the increasing prevalence of the cheating industry (Pontiroli 2019), its commercial aspect as shown through advertisements has largely been overlooked in academia.

Advertisements are commonly geared towards satisfying the needs and desires of a target consumer, which in this case is a player willing to consider or engage in cheating. Therefore, we determined that they can be used to complement the observations made from the videos, and gain a wider understanding of the elements that capture the attention of the cheating players. As part of the data collection process, we arranged screenshots and notes of the banners and the front page of the host websites, detailing text descriptions of the products and services provided.

3.3.4 Systematic literature review

Systematic literature review (SLR) was carried out on the existing literature on game cheating to ensure the completeness of our findings from our empirical dataset (Chapter 7). The SLR approach aggregates empirical evidence within an evidence-based framework (Brereton *et al.* 2007), providing researchers with a structured approach to objectively assess and synthesise findings.

The nature of the SLR dataset varies from the previous ones in that we focus on synthesising evidence that arose from primary studies, instead of re-analysing the original dataset (Dixon-Woods *et al.* 2005). Based on their seminal work on comparative textual analysis of published work, Noblit and Hare (1988) explain the use of interpretive literature reviews. They propose that such reviews can achieve a more comprehensive understanding by integrating the concepts already identified in the original studies, thereby creating a "higher-order theoretical structure" (Dixon-Woods *et al.* 2005). SLR also helps establish a criterion to evaluate the validity and quality of the work, by potentially revealing inconsistencies or contradictions (Paré *et al.* 2015). Therefore, applying this method to our analysis allows us to make connections across various studies on themes which may not have surfaced prominently in our empirical work.

We surveyed key literature from the past two decades, a period in which academic research into online game cheating began to gain prominence both within the industry and academia. We used Google Scholar and the ACM Digital Library

to search for articles using keyword phrases. We also reviewed their references and citations to identify additional relevant work.

The sampling was purposive, rather than exhaustive, and the search was stopped when we reached a theoretical saturation (Doyle 2003). The list of literature was compiled with each literature comprising the following variables: title, author, date, abstract, and publication venue. Our preliminary dataset includes research articles, industry reports, and news articles in the field of HCI, game studies, and cyber security. The quality of the chosen studies was assessed according to their quality of the reporting (e.g., how detailed and rigorous the study's aims, context, and methods are) and appropriateness (Cobb & Hagemaster 1987).

3.3.5 Overview of the collected data

Table 3.1 presents an overview of the data contained in this thesis according to the chapters. To summarise the collected datasets, Chapter 4 adopts interviews and observations of video and advertisement, whereas Chapter 5 and 6 are based on two sets of interviews that were combined. Chapter 7 assembles all the datasets and combines them with a systematic literature review, pilot study, and expert reviews.

The abductive reasoning approach determined our data collection sequence (Section 3.2.2), meaning that the sequence of the data collection ran independent of the order of the chapters laid out in this thesis. The chapters were subsequently structured to better showcase these connections. Figure 3.2 presents the timeline in which the data collection and analysis were carried out. The sequence of the study is structured numerically and alphabetically, where the number indicates the specific study, and the subsequent letter denotes one of the two steps in the research process: data collection or analysis. Data from each interview set were used to form inferences about existing theories that could explain the phenomena observed. Once the data collection was complete after the third set of interviews, all the data were compiled and re-coded comprehensively in alignment with the overarching themes adopted during the initial analysis.

Ch.	Objectives	Methods
4	Establish the social dynamics in cheating.	Abductive analysis of semi-structured interviews: • primary data (n=27), • secondary data from Ch. 5 & 6, Content analysis of video (n=179) and advertisement (n=21) observations.
5	Identify the modes of engagement in cheating.	Abductive analysis of semi-structured interviews (n=43).
6	Map how the relevant resources and interactions are governed.	
7	Demonstrating the social structures & identifying areas of intervention.	Conceptual framework analysis integrating: • semi-structured interviews from Ch. 4-6, • pilot interviews (n=12), • systematic literature review (n=12), and • expert interviews (n=6).

Table 3.1: An overview of the datasets collected over the course of the thesis (2020–2023).

It is worth noting that the responses of the participant groups may have been significantly influenced by the outbreak of COVID-19, which happened in the same year as the first data collection phase. Field experts note that during this period, cheating communities experienced increased activity as users had more time to spend on games, while game companies saw a decline in work productivity (from Section 7.5). The recruitment phase likely benefitted from the pandemic lockdowns, as potential participants who were spending increased time in games may have been more inclined to accept interview requests than in times prior to COVID-19.

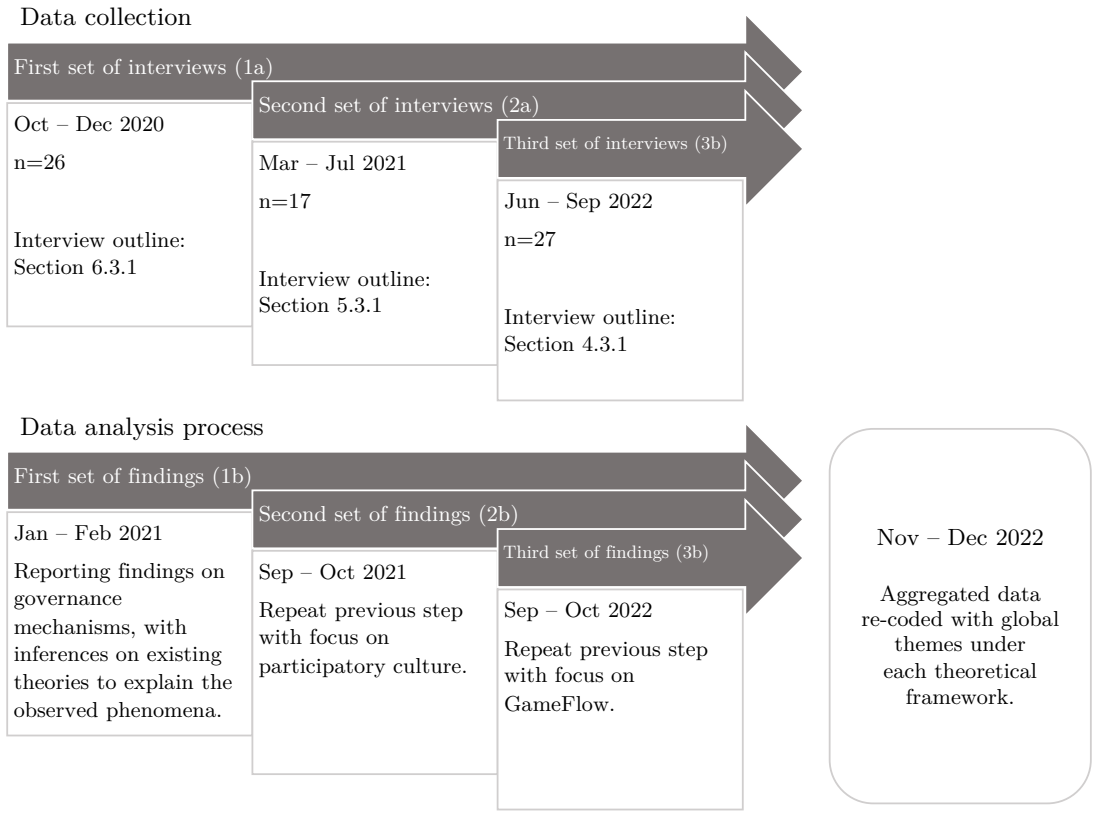

Figure 3.2: Timeline outlining the stages of data collection and the iterative analysis process.

The demographic backgrounds of the study participants are presented in Figure 4.1.

3.4 Data Analysis

3.4.1 Abductive analysis

In line with the abductive approach (Section 3.2.2), data analysis in this research followed an iterative process that involved systematically examining both the existing and emergent themes, and observing their relation to the theoretical frameworks (Timmermans & Tavory 2012). In the initial phase of our analyses, we developed a codebook grounded in theoretical propositions from established frameworks to guide the coding activity. Before coding the interview transcripts, we took other contextual documentation into consideration, including shared links, memes, and images. The initial coding strategy prioritised themes aligned with the theory.

However, as the analysis progressed, new themes emerged—some aligning with the pre-established high-order codes, and others requiring the development of new codes. This iterative approach continued until we achieved conceptual saturation (Doyle 2003). To facilitate a comprehensive understanding, the researcher crafted a thought board which was collaboratively discussed with two supervisors. This allowed us to gain a coherent narrative and ensure that the exploratory nature of the research was thoroughly captured. Each empirical chapter follows this analytical approach, which emerged through the cumulative abductive process developed over the course of the research.

3.4.2 Other methods

Complementary to our main approach, we also employed other analysis methods to add robustness to the primary interview data.

Content analysis: Content analysis identifies themes and concepts to reflect on the new meanings and relations within a domain (Krippendorff 2018). It is a valuable method to employ when there is limited knowledge about a target phenomenon (H. Hsieh & Shannon 2005). In the context of game cheating, content analysis can reveal not only the linguistic qualities of interest to the users but also the social and cultural aspects embedded in the communication intent. In Chapter 4, we analysed the video observation data using content analysis to complement the findings from the interview data.

Secondary analysis: Empirical data collected from Chapter 4, 5, and 6 were applied through a secondary analysis in the process of building a conceptual framework (Chapter 7). Secondary analysis of qualitative datasets is a recognised method of research, providing the opportunity for researchers to repurpose and assess data across multiple studies. Some criticisms of secondary analysis are that it runs the risk of decontextualisation, and it might only be useful within specific theoretical and methodological constraints (Berg 2008). However, this critique holds less weight in the context of this thesis, as the researcher who conducted the

data collection also carried out the analysis. This continuity allowed for a deeper engagement with the material, including nuanced community anecdotes, insider jargon, and cultural schema observed during the data collection.

Thematic synthesis: Thematic analysis in the context of a systematic literature review (also referred to as thematic synthesis) provides a clear identification and structure of prominent themes (Dixon-Woods *et al.* 2005). It is particularly useful for consolidating understanding of the existing body of literature, ensuring that the insights are grounded in collective evidence rather than isolated studies. For the case study covered in Section 8.3.2, we followed Thomas and Harden's (2008) three-stage synthesis protocol, which involved coding textual data from the literature and developing preliminary descriptive themes.

3.4.3 Evaluation

The quality of qualitative research is assessed based on the measure of validity, reliability, and generalisability. Validity determines the appropriateness of tools, processes, and data, and the precision with which the findings accurately reflect the data, whereas reliability presents the consistency of the methodological processes that would have influenced the results. We used triangulation on all the collected data with the same participants and new participants with more experience in the community to ensure the validity of our findings (Breitmayer *et al.* 1993). Triangulation involves drawing on multiple data sources, methods, and participants to validate and cross-check the observed phenomena. When thoroughly carried out, triangulation can support validation and completeness of the results (Ammenwerth *et al.* 2003). The datasets from the interviews were reviewed together with seven previous participants to ascertain the responses and clarify concepts which surfaced during coding. The "think aloud" strategy also facilitated the process of consensual validity by articulating the reasons behind the approaches taken, while enhancing the reflexivity of teamwork overall. The penultimate codes were iteratively reviewed together with the author's supervisors to settle on the key themes.

Generalisability refers to the extent to which the observed associations from one sample of participants can be applied to wider groups. To demonstrate generalisability, researchers have used replication studies in other populations, times, or places (Sandelowski & Barroso 2006; Paterson *et al.* 2001). It is also recommended to secure a wide sample which does not merely focus on the size but also diversity (A. S. Lee & Baskerville 2003). In analysing our findings, we expanded the investigation to different multiplayer genres, as explained in Section 4.3.3, where we took into account multiple factors to choose the genres. Four game genres were initially identified that best represented the game industry today based on the number of active users: FPS, MOBA, RPG, and Open World games. We then selected specific examples of games with consideration to 1) the number of games per genre, and 2) accessibility (i.e., relevant platforms are made public, predominantly uses English, and at least 2 years since its release). From the final list of datasets, we excluded those from which we received no responses, while retaining relevant contacts for potential follow-up during the evaluation phase.

Sandelowski and Barroso (2006) argue that conventional techniques used to establish inter-rater reliability, while confirming agreement among researchers, do not necessarily guarantee truthfulness. With this in mind, we believe that the methods we have used to evaluate the quality of our research are adequate within the context of this thesis.

3.5 Methodological Contributions

This thesis provides a novel perspective on cheating by foregrounding the lived experiences of players, rather than relying on insights derived solely from external observation. The following section discusses the methodological contributions arising from our research.

3.5.1 Shifting away from the adversarial perspectives

The subject of game cheating often falls to the discretion of researchers for interpretation, resulting in inconsistent analyses and understandings of what constitutes

cheating, and the related moral perspectives. Such inconsistencies can be traced back to the absence of an applicable, unified framework that embraces the nuances of contemporary game cheating. This, in turn, has influenced the forms of cheating that researchers incorporate into their methodologies (discussed in Section 3.3.2), potentially overlooking other significant areas that do not fit into the predetermined narrative. Research on the topic so far has primarily been examined through policy-driven lenses focused solely on elimination—a perspective that further entrenches this perception. As such, cheating is often viewed as a practice to be eliminated from game platforms rather than understood, and some scholars argue that this approach actually encourages players to cheat in order to alleviate pressure (L. Wang *et al.* 2019).

To move beyond the negative biases surrounding cheating, this thesis adopts an ontological perspective of online communities, using it as a basis for understanding the "structure of reality" rather than accepting the normative assumptions to be inherently true (Guba & Lincoln 1989). This stance calls for immersion in lived experiences and understanding its influence on decision-making to develop a deeper understanding of how concepts and language manifest in practice (Heidegger 1977). To ensure credibility, the approach also embeds reflexivity, guiding researchers to continuously assess their role and assumptions during the process (Pitard 2017). When applied through the ontological lens to both scope and methodology, this reflexivity entails rigorous self-reflection to uncover assumptions that have shaped prior efforts.

3.5.2 Addressing accessibility issues in sampling

Given the covert nature of cheating in research, securing direct access to a population of cheating players proves to be a considerable challenge. Existing studies on cheating rely on general-purpose platforms, making it hard to gain more in-depth perspectives of those who cheat themselves. Researchers have so far recruited from a pool of mainstream gamers (V. Chen & Ong 2018) and students (Consalvo 2007; Wu & V. Chen 2013; Doherty *et al.* 2014). This approach has also been applied to

similar behaviours such as unauthorised modding (Curtis *et al.* 2022). However, the inclusion of participants lacking direct engagement with the target behaviour risks compromising the accuracy of the findings, as such samples may inadequately represent the phenomenon of interest.

Moreover, the nature of the interviews is fundamentally shaped by the willingness of the participants to acknowledge their engagement in cheating. If they do admit, participants frequently adopt a defensive stance against the socially constructed stigma associated with cheating, overshadowing the objective analysis of the behaviour itself, as observed during the pilot study. This risks diverting the research towards generalised surveys, which could obscure insights into the broader dynamics of the activities. To address this issue, Chapters 4 to 6 outline a recruitment strategy focused within cheating-specific communities, rather than general gaming populations.

3.5.3 Navigating researcher risks

Once referred to as "toxic technocultures" (Massanari 2017), game communities have a unique reputation for toxic behaviours that game researchers are inevitably exposed to during their study. The identity of the researchers poses the biggest challenge. When methodologies encompass interactive components, such as interviews or focus groups, researchers are expected to disclose their identity as part of the procedure. However, as researchers are often perceived as outsiders to the gaming community, they may encounter antagonistic behaviour when they fail to align with the identity norms of its members (Braithwaite 2016). Such interactions can inhibit their ability to access viable subjects or data, thereby hindering the overall research process. Equally important is how such behaviours of the subjects impact the researchers themselves. Social scientists who frequent toxic online communities have called for better protection of researchers in the blind spots of qualitative research, which present potential risks to their well-being (Stein & Appel 2021).

Despite the growing attention to promoting researcher protection (Waycott *et al.* 2016; Stein & Appel 2021; Doerfler *et al.* 2021), the specific requirements demanded

in the context of gaming are overlooked. As a result, researchers involved with game communities face significant challenges which they would not typically receive in other types of environments. Given the growing interest in the intersection of games into our everyday social lives, active debate in this area is warranted to better inform future researchers and protect the relevant users.

In Section 8.4.3, we elaborate on the negative impacts experienced during the data collection process of this thesis. These included interactions with trolls, experiences of cyber threats, and identity-based harassment, highlighting the need for more effective strategies to mitigate such challenges. The insights derived from this reflection resulted in a collaborative workshop with game scholars, creating a space to articulate challenges in their methodologies and perceived threats arising from their work, while identifying actionable pathways for intervention (Boldi *et al.* 2023; Boldi *et al.* 2025).

3.6 Research Ethics

This section presents the ethical considerations underlying the methodology. We discuss the guidelines we used to ensure our studies were carried out with utmost ethical considerations for protecting participants and the researcher.

3.6.1 Ethical guidelines

In planning out our data collection phase, we relied on the institutional guidelines offered from fields of psychology and sociology to align the research ethics: 1) British Psychological Society: Conducting Research on the Internet Association of Internet Researchers Ethics Guide, 2) British Psychological Society Code of Ethics and Conduct, and 3) Social Research Association: Ethical Guidelines. The data collection and analysis were carried out with institutional approval from the researcher's academic institution, with consideration for the rights and protection of users.

3.6.2 Participant protection

Rewards There were no monetary rewards associated with participating in the studies. Studies have found that monetary rewards do not always lead to desired outcomes, as an increase in quantity does not necessarily scale to its quality (Mason & Watts 2009). There are alternative incentives for participants besides financial incentives when participating in research, such as contributing to research, having genuine interest, or meeting other people (Stunkel & Grady 2011). For our studies, it is likely that many of the participants volunteered in the interviews out of curiosity, boredom, and satisfaction in contributing to a research topic of their interest. Nine prospective participants contacted the researcher to enquire about the legitimacy of the study and its affiliation with the institution. Many participants repeatedly sought reassurance that the researcher was acting in good faith, and that the account used for interviews genuinely belonged to the intended interviewer rather than a troll.

Anonymity The research did not gather personally identifiable information about the participants to protect their anonymity. The nature of anonymity in gaming, and other social platforms used by cheating players, made it practically impossible to identify users in real life. Instead, we retained a list of participants' user IDs against the unique codes we provided before the interview. Users change their user IDs frequently so the unique codes helped return to and identify the correct user for any follow-up questions. More importantly, while anonymity offered participants a sense of safety, it also prevented the researcher from confirming their eligibility to participate in the study, leading us to the next section.

Age The adult participants we targeted for this research were not considered at risk. However, the anonymous nature of the platforms in use prevented the researcher from being able to officially verify the participants' age. So theoretically there is a possibility that some were dishonest about their age upon giving consent to the interviews.

Participant dishonesty regarding age was assessed during the interviews based on the communication style. Interviews were aborted when a participant was noticeably young and vulnerable (i.e., below 16 or unable to consent). There were four instances when the interview had to be aborted for this reason: 1) one participant who had a clear indication of being underage based upon their linguistic behaviour, and 2) three participants who informed the researcher of being underage at the consent stage before the interview.

Vulnerability For those who project risk of significant harm and inability to protect themselves, the interviewer was prepared to provide helpline contacts for child protection, which was planned to take priority over the research (as recommended by the National Society for the Prevention of Cruelty to Children).

Incidental findings The British Society of Criminology Code of Ethics for Researchers in the Field of Criminology in Section 4(iv) (Finch 2001) states that "researchers should respect promises of confidentiality and not pass on identifiable data to third parties without participant's consent" but that "researchers should also note that they should work within the confines of the current law over such matters as [...] confidentiality". In response to this conflict, criminologists have suggested that "when the researcher deliberately engages in research about illegal activity, this and any associated crimes should be within his contemplation when guaranteeing confidentiality". Ultimately, there was no need to break confidentiality unless someone was in imminent danger or the issue was extremely serious. If the interviewer encountered an instance where someone was in imminent physical danger, or if they came across a very serious criminal activity, they planned to discuss with the supervisors and the ethics committee to decide whether to break confidentiality.

4

The Social Elements of the Cheating Experience

Contents

4.1 Introduction

Investigating the cheating community requires a foundational understanding of its roots in the gaming environment. This involves closely examining how the social experience within games, as a component of the broader play experience, transitions into community dynamics beyond the game itself. In the field of HCI, scholars have significantly employed the concept of user experience within games to gain a comprehensive understanding of player preferences. These studies recognise the integral role that social interactions play in shaping the overall gaming experience. The theoretical elements they present can be applied to the concept of cheating, helping us understand how individuals become integrated into the social dynamics seemingly exclusive to cheaters.

This chapter explores the experience of cheating players by examining the social dynamics that arise within games. It addresses the first part of our central research question ("*How are game cheating communities* ***established****, reinforced, and governed?*") by analysing the initial forms of social interactions among these players. To explore this, we employ Sweetser and Wyeth's concept of GameFlow (2005) as a lens to understand in-game experiences that encompass both the individual and social aspects. Furthermore, we examine how players perceive game publishers as the established custodians of games. This adds nuance to our current

understanding of the motivations for cheating beyond the momentary impulses to cheat. The objectives are articulated through the following sub-research questions:

1. What types of play experience exist in cheating and unauthorised modding?
2. What kind of social dynamics transpire from the cheating experience?
3. What are players' perceptions of game publishers concerning their play experience?

This chapter is designed to focus only on the unauthorised player activities as defined by game companies. The terms used to refer to unauthorised behaviours vary according to context, including but not limited to *cheating*, *hacking*, *modding*, and *glitching*. The methods in this chapter incorporate two game genres: *GTA V Online* for action-adventure games and *CS:GO* for FPS. In these two, the words *modding* and *cheating*, respectively, are used most commonly to refer to unauthorised behaviours, which are reflected in the research questions. It is important to clarify that *modding as referred to here in the GTA V context does not represent the modifications positively endorsed by game companies but instead refers to the unauthorised changes made to the game that are perceived to have adverse effects on others*, aligning it with the concept of cheating (U.S. District Court 2019; HCJ 2020).

In the following sections, we review related work focused on play experiences and describe our method for the study. We then present the findings on the varying modes of play experience, the social dynamics among cheating players, and the perceptions of game publishers held by players in relation to these experiences. We draw on these findings to offer insights into how cheating players derive meaning from their interactions in games. The discussion uncovers a nuanced understanding of how such players perceive games as mediums that enable greater control of the game and foster social capital beyond the predefined constraints of the gaming environment.

4.2 Player Experience

Player experience (PX) provides a valuable lens for understanding how social activities organically emerge within games. This allows us to trace the roots of game cheating wherein it occurs, and provides an initial context for comprehending

the seemingly paradoxical concept of social interaction among cheaters. In the following, we draw on literature that applies user experience principles to games, with particular attention to the discrepancies between player interactions and designer intentions. This review brings to light the idea that play experiences are inherently diverse, suggesting that there may be more nuanced layers to them than acknowledged from the outset. We then review a theoretical framework used as a guide in designing this study for uncovering the play experiences.

4.2.1 Intended vs. actual player experience in games

The application of user experience in games presents an intriguing contrast to some of its key principles. Games, by design, intentionally present players with challenges and obstacles; the resulting sense of achievement obtained from overcoming these hurdles has been associated with player enjoyment and ongoing engagement in games (Lazzaro 2009). This is because games as a product differ from other user-facing products. Their primary objective is to facilitate a playful experience rather than a functional one (Nacke & Drachen 2011). While designers do embed functional design elements to ensure that players utilise the game mechanics as intended (e.g., being intuitive to navigate, which is distinct from being easy to win), such elements are eventually a means to delivering an experience that is pleasurable in and of itself (Hassenzahl 2004). This requires game designers to go beyond the conventional user experience principles, and incorporate other distinct elements, such as playability (i.e., the quality of being easy and enjoyable to play) and challenge, to promote player engagement. Researchers have encapsulated these elements in the concept of PX, capturing the qualities that occur during and after a player interacts with a game (Nacke, Drachen & Göbel 2010; Kristiadi *et al.* 2017; Nacke & Drachen 2011).

A key challenge for game designers is accurately reflecting the varied and unpredictable ways users play. The diverse strategies and behaviours users exhibit often differ from the intended design and expected pathways, making it challenging to align with conventional modes of user interaction. What distinguishes games from other technological domains is the unique position of the player—they are not

merely a consumer who enjoys the product but also an active participant capable of directly manipulating the game itself. This makes games particularly prone to inconsistencies between what the designer intended and what the player does (Hassenzahl & Tractinsky 2006; Hassenzahl 2004). Designers cannot guarantee a specific experience on behalf of a user because the user will be exposed to it from a different context. In practice, the game mechanics designed to provide enjoyment may fail to engage players as anticipated. This can lead to complete disengagement or prompt players to experiment with novel elements in an effort to revitalise their play experience (Consalvo 2007).

In her work on research methods in games, Consalvo notes that the majority of qualitative game research assumes that players are interacting with games in the way designers intended, overlooking players' actual in-game behaviours (Consalvo & Dutton 2006). She argues that the visual and spatial elements of game mechanics play a crucial role in game research. Her discussion also emphasises the need to consider unexpected scenarios where players may be compelled to perform actions outside the game's intended scope, such as encountering a bug or questioning newly imposed restrictions. These underscore the importance of understanding the player experience from their perspective, as their in-game behaviours may vary widely in practice. Although the gaming industry has recently seen an increase in interest towards a player-centred design approach (K. Rogers *et al.* 2016; Bakkes *et al.* 2012), many aspects that influence a player's experience are not always foreseen by the game designers nor recognised by the players themselves.

While game designs are fundamentally intended to foster fair and rewarding play, the presence of cheating disrupts these systems through unfair advantages. Such practices not only contradict the principles of playful engagement but also diminish the value of genuine effort and competition among players. These tensions reveal complex dimensions of the player experience, which remain underexplored in existing research on cheating.

4.2.2 GameFlow

One of the ways in which scholars have sought to understand player perspectives is through the concept of flow. Csíkszentmihályi (1990) introduced flow as an experience that is "so gratifying that people are willing to do it for its own sake, with little concern for what they will get out of it, even when it is difficult or dangerous". In his work, he introduces eight elements of flow experience that together create such a rewarding sense of enjoyment that people consider it worth investing significant time and energy. Based on the concept of flow, Sweetser and Wyeth (2005) provided the GameFlow framework which forms the basis for our analysis on player experience.

The choice of the GameFlow framework for this study is motivated by our interest in examining the extent to which cheating induces flow, as a direct indicator of the enjoyment it offers players. While there are other frameworks, such as the Player Experience Inventory (PXI) and Mechanics, Dynamics, and Aesthetics (MDA), that provide a wider array of player experience dimensions and design mechanics (Abeele *et al.* 2020; Hunicke *et al.* 2004), GameFlow specifically targets the concept of flow. This focus is in line with our analysis of the player's subjective experience, rather than prescribing a certain way to play the game or addressing the mechanical aspects of a game system. Our research does not focus on modifying games but rather explores how the means to cheat affect players' flow experiences within games.

Their GameFlow criterion include the following:

- **Concentration**: Games should require concentration, quickly grab the players' attention, and maintain their focus throughout the game.
- **Challenge**: Games should be sufficiently challenging for a given player's skill level, providing new challenges at an appropriate pace.
- **Player Skills**: Games must support player skill development and mastery. Learning the game should not be boring but be a part of the fun.
- **Control**: Players should feel a sense of control over their characters, movements, and interface in the game. Players should feel a sense of freedom over

the strategies they take, and be allowed to play the game the way they want, instead of simply following the strategies introduced by the game developers.

- **Clear Goals**: Games should provide the player with clear goals at appropriate times.
- **Feedback**: Players must receive appropriate feedback at appropriate times.
- **Immersion**: Players should experience deep but effortless emotional involvement in the game combined with a lack of awareness of time and the outside world, and a sense of being in the task environment.
- ***Social Interaction****: Games should support and create opportunities for social interaction between players inside and outside the game.*

The final criterion of GameFlow—social interaction—is distinct from others in that it is particularly challenging for a limited group of designers to artificially design. Given that multiplayer games encompass a social experience, the interactive elements can either enhance or decrease player engagement. While this is usually seen in the form of cooperative team play or competitive rivalry, some games offer alternative modes of interaction, such as monitoring other players' battles in team matches.

Brown and Cairns (2004) investigated the notion of immersion which is similar but different from Csíkszentmihályi's concept of flow. According to them, immersion involves varying levels of engagement, and does not always reach the heightened state associated with flow. Jennett and colleagues (2008) extended this notion of immersion, overlapping with the concept of flow on concentration, challenge, control, and immersion (i.e., emotional involvement and real-world disassociation). While sharing similar qualities, they claim that additional factors such as clear goals contrast with the more relaxed concept in their work. In their notion of immersion, for instance, a player can be immersed in a game to a certain extent but not so far as to the absence of the surrounding elements, as described by Csíkszentmihályi. In a later work, the researchers found that flow is highly emotionally charged, where negative emotions can occur in immersion as much as positive experiences (Jennett *et al.* 2008).

4.2.3 Summary

Play experience offers a valuable lens for examining the desires of the players and the realities of their in-game experiences. As a component of the experience, understanding the type of social activities that emerge within gaming environments provides a solid foundation for understanding how such activities can evolve into larger social dynamics. This not only helps provide evidence on the seemingly contradictory nature of the social interactions among cheaters but also highlights the influential role of PX in shaping the opportunities perceived and choices made by the cheating players. Further, the discrepancies between player interactions and the intentions of the game designers hint at the presence of more nuanced aspects of cheating that transcend the fleeting 'intra-game' motivations typically referenced in the literature on cheating.

4.3 Methodology

In the data collection and analysis phases, the GameFlow framework served as the primary guiding structure, providing relevant theoretical propositions to shape the inquiry. In the following, we provide the details of the process and an overview of the sample. A visual summary of the datasets contained in this thesis is found in Section 3.3.5.

4.3.1 Data collection

We gathered data from two game genres using a combination of semi-structured interviews and observational studies. To complement the design of the interview, we incorporated insights from publicly available videos and image-based advertisements related to cheating, and iteratively revised the expressions used during the interviews. In the following sections, we outline the methods employed and discuss the rationale behind the selection of the games.

Interviews

Two sets of interview data were used in this study. First, we designed and carried out interviews with players with relevant play experience in cheating. Following numerous unforeseen issues which arose during the process, we scoped down the game to *GTA V Online* and *CS:GO* to recruit participants (see Section 4.3.1), which make up the primary and secondary datasets of this chapter, respectively. The data collection methods for the secondary datasets are found in Section 5.3 and 6.3.

Participants for the primary interview data collection were recruited through Reddit and Discord through purposive and snowball sampling. In June 2022, we distributed participant surveys on dedicated Reddit forums (*r/Gta5Modding/*), and received contact recommendations from participants of preceding interviews. The inclusion criteria were to 1) be above the age of 18, 2) consider themselves to have cheated or used modding tools in *GTA V Online*, and 3) speak English.

Our interview questions were semi-structured to facilitate open-ended responses, enabling participants to express their perceptions and reflections on their experiences. Following the interview, the participants had an option to respond to a brief demographic survey asking for their gender, age, employment status, and base country. The guiding interview questions were as follows:

- How long have you been involved in cheating/modding in [the game]?
- Do you recall what made you want to cheat/mod in this game the very first time?
- Can you briefly explain what cheating/modding in [the game] entails from your experience? Are there any specific features you prefer or frequent from the cheats/ mods you have used?
- What do you look for in a cheat/mod? If there are several similar ones in the market, how do you go about making your pick?
- Do you find it fun to cheat/mod? If so, exactly what part of it do you enjoy the most?
- Is there anything you would like to see changed or introduced by the game developers in relation to your experience cheating/modding?

The interviews lasted between 20–60 minutes, and were all carried out via text chat on Discord or Reddit. There were no financial rewards involved. Two interviews were carried out asynchronously, and came to a halt for no apparent reason when the interview questions were approximately halfway through. Nevertheless, the responses were retained because of the valuable insights provided early on in the interviews.

The data collection and analysis in this study were carried out with institutional approval from the Social Sciences and Humanities Interdivisional Research Ethics Committee of the University of Oxford (ref. num.: R77226/RE001), and followed the same administrative steps taken in the data collection process for interviews in Chapter 5 and 6, including confirming the age and collecting consent.

Selection of games for primary datasets

The methodology of the following study was originally designed to collect data across four game genres (FPS, MOBA, RPG, and Open World) selected based on the number of active users and accessibility. Despite the plan to obtain an even number of interview participants across the chosen games, we encountered unexpected difficulties accessing the population. The interview participants were recruited through multiple gaming forums but there was a noticeable discrepancy in user reactions across different subreddits. We struggled to receive views, upvotes, or comments in the recruitment posting in certain subreddits, even with the help of moderators to achieve more traction, whereas we received far more activity in other subreddits (i.e., *r/GTA5Modding*). This is likely due to the differing base activity levels and subscriber numbers across the subreddits; for instance, many subreddits dedicated to *PUBG* (2017) were either defunct or too low in numbers to gain any meaningful reaction from the user base. We also set out to other platforms that operated independently of game servers and social media that were either dedicated to discussions or sales, and sent cold messages to forum administrators and users. These involved general cheat platforms (i.e., Ownedcore, Unknowncheats, ElitePvP), modding platforms (i.e., The Nexus Mod's Forums), and account trading

platforms (i.e., EpicNPC). However, our posts often went unnoticed by the user base or were forbidden by the forum policy.

The number of interviews for *GTA V Online* ultimately remained substantially higher and of greater depth than for other games. As a result, we decided to focus exclusively on analysing *GTA V Online* data first. The resulting interview data was then combined with the secondary interview dataset, which focused on *CS:GO*, an FPS game, to provide varied perceptions on the topic. We maintained contacts with users from other games throughout the interview, so that we could reach out afterwards to validate the results (see Section 4.3.3).

Observational study

1. Videos The video observation involved three different steps: 1) extracting the contents, 2) surveying through the titles and eliminating irrelevant ones, and 3) screening for relevance.

1. On the 1st of July 2022, we used the Youtube Data API to crawl the videos using the search seed "cheating" or "modding" with the name of the game. The filter setting was adjusted to select the first 100 videos by view count, with contents created since January 2017, and in English. The inclusion filters were set for online PC games (e.g., no Playstation 4 or Xbox one), view counts above 1000, and duration under 60 minutes. As the contents of the videos themselves are not directly searchable, we relied solely on the text features (i.e., title, tag, and descriptions) to search for terms. A preliminary search of the terms allowed us to gain more insight into the semantic features of cheating and modding in specific games (e.g., cheats, mods, exploits, or hacks). We collected the title, date of posting, view count, unique video ID, and channel ID.
2. From the initial round of results, we scanned for erroneous contents corresponding to the exclusion filters. We then omitted those which pertained to catching or condemning cheating players, or contained no verbal or text-based

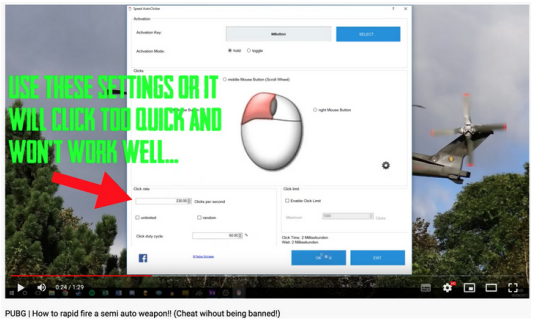

Figure 4.1: A walkthrough video illustrating the installation and use of a cheat.

Figure 4.2: A gameplay video showcasing tactics employed by cheaters.

communication throughout the video (e.g., a static image or a silent gameplay video).

3. The author then watched the contents, taking note of all the explicit and implicit themes (e.g., a walkthrough video shows how easy it is to play without getting banned, implying low barriers in anti-cheating), as well as relevant game mechanics and jargons to apply in future interviews. The videos were all observed within a 10-day period.

The videos selected from the data collection encompassed various types, including reviews, tutorials, walkthroughs, streams, and general documentation, all centred around the subject of cheating.

2. Online advertisement banners Advertisements were identified through the notes taken from previously crawled videos, participant recommendations, and platforms where our interview recruitment forms were posted. The selected advertisements were all publicly accessible, with their front pages typically featuring the same words and phrases found in external promotional materials. Screenshots

and notes were collected for each banner and the front page of the host site, including the main title, subtitle, and high-level descriptions of the advertised cheat products and services. The advertised offerings were categorised as either free or pay-to-play. The accompanying notes aimed to objectively capture the factual content and the language used in these promotional materials (G. Cook 1992), with particular attention to their commercial value (e.g., costliness) and social appeal (e.g., promises of increased player status or recognition).

4.3.2 Data analysis

Given the varied nuances of our research questions, we structured the data analysis into separate stages. The initial assumption was that the theoretical propositions stemming from the GameFlow model would not be universally applicable to each research question. Specifically, RQ2 centres on social dynamics, representing just a facet of the broader PX criteria, while RQ3 addresses player perspectives on game publishers, which, although not directly rooted in, emerge in relation to the PX. To cater to these distinctions, the analysis was structured into four phases.

Part I: Analysing for RQ1. In the first phase, we came up with a codebook that reflected the theoretical propositions of the GameFlow framework (i.e., concentration, challenge, player skills, control, goals, feedback, immersion, and social interaction). We then coded the interview with initial tags indicating different play experiences. We generated both latent codes, interpreting underlying participant intentions, and semantic codes, directly reflecting participants' words. Then, we identified areas where the observed play experiences from data fit or deviate from the established codes. For diverging patterns not covered by the codebook, we modified the original PX framework to incorporate the context-specific observations of cheating. While responses could be assigned multiple codes, the resulting themes were not mutually exclusive, allowing individual codes to contribute to several themes simultaneously. Afterwards, we returned to the data to examine with this adjusted theoretical lens of PX, and iteratively modified the codebook according to the emergent

themes. The iterative process was halted upon achieving a state of conceptual saturation (Doyle 2003).

Part II: Analysing for RQ2 & RQ3. To address RQ2 and RQ3, we focused on emergent themes, particularly those concerning social interactions within the PX and players' perceptions of the publishers. New codes were developed to capture diverging patterns as they arose. We then delved deeper into the data, evaluating the codes identified in the previous phase and seeking additional insights. Throughout this process, our understanding of the social interactions was continuously refined in an iterative manner.

Part III: Comparing the interview themes with observation data themes, and reaching consensus on global themes. For consistency, we cross-checked the findings with observational data (i.e., video and advertisement) which were examined using content analysis (Bengtsson 2016). At this stage, we initially generated codes by identifying patterns that appeared most frequently in the data. Technical words and jargon were also incorporated into codes that encapsulated their meaning. The impressions and relevant ideas about the observed content were included as complementary notes, while the themes were developed by organising the codes into common clusters. Data collection on advertisements—carried out concurrently with the analyses—came to a halt upon reaching conceptual saturation (Fusch & Ness 2015). Finally, the resulting codes and themes were reviewed and discussed with the two supervisors, who are both familiar with the domain, and were subsequently fine-tuned for clarity.

Analysing for RQ1 resulted in two sets of output. The resulting modified codebook retained all the same elements except clear goals, concentration, and feedback, which we reflect on towards the end of the study (Section 4.5.4). The emergent themes of the RQ1 analysis include *enjoyment, autonomy, gaining an edge, HvH, revamping the existing mechanics, customisation, cheat strategy, a daring scenario,* and *god mode*. RQ2 analysis resulted in the following themes: *competition,*

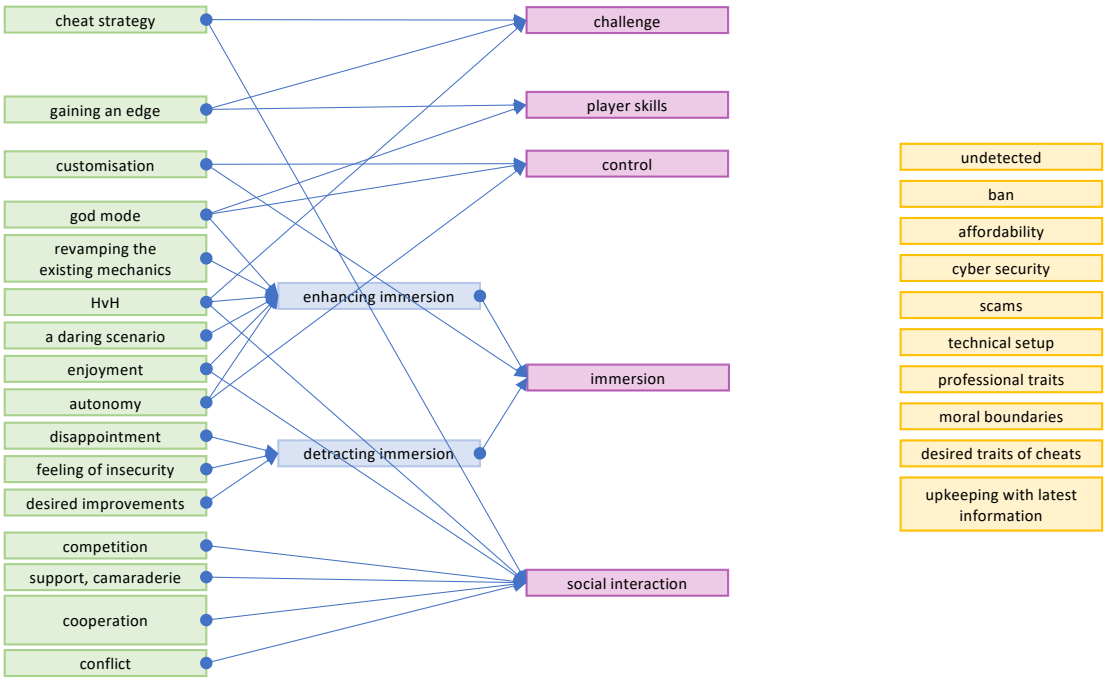

Figure 4.3: Codes and themes from analysis with the GameFlow framework

support/camaraderie, *cooperation*, and *conflict*, while RQ3 analysis resulted in: *disappointment*, *feeling of insecurity*, and *desired improvements*.

During the analysis process, several codes were identified but not incorporated into the findings section of this work (i.e., *affordability*, *undetected*, *ban*, *cyber security*, *scams*, *technical setup*, *professional traits*, *moral boundaries*, *desired traits of cheats*, and *upkeeping with the latest information*). While these codes were retained for potential future inquiries, they were deemed not to be aligned with the research questions central to this study. As a result, the focus was narrowed to codes that offered a more direct insight into the main research objectives. Figure 4.3 displays the result of the analysis. The codes are arranged in the descending order of frequency, with the most prevalent code at the top, and also reflect the themes from the observational data (i.e., video and advertisements).

4.3.3 External validity and generalisability

The quality of the data was assessed and revised using triangulation and comparison throughout the data analysis process. To determine the generalisability of the

findings that surfaced in *GTA V Online* and *CS:GO*, we incorporated player insights from RPG as another game genre, and investigated *Dark Souls* and *World of Warcraft*. 'Soulsborne' games refer to a series of games developed by FromSoftware—notably *Dark Souls 3*, *Bloodborne*, and *Elden Ring*—that follow a specific set of rules and mechanics, and are generally considered to be a sub-genre within RPG among game players. While *World of Warcraft* is also rooted in the role-playing genre, it distinguishes itself by offering a massively multiplayer online gaming experience characterised by its persistent world.

4.3.4 Sample overview

A total of 70 users participated in the interviews (primary data: 43; secondary data: 27). Details of the demographic information are provided in Table 4.1. Fifty-nine participants who responded to the demographics survey self-reported as male, one as non-binary, and the remaining ten chose not to answer. Over 60% of the participants were below the age of 21 with the oldest being 32 and the youngest 18. Participants' geographical regions spanned across the globe, with Europe being the highest with 25 participants. Thirty-one participants identified as students, 17 as employed (including part-time and freelance status), 11 as both, and 4 as unemployed.

Twenty-eight participants had experience in more than one of the games presented in the following interviews. For instance, the *World of Warcraft* participant had experience in *Lost Ark*, and several *GTA V Online* participants had modding and cheating experiences crossing over other FPS (i.e., *PUBG, Call of Duty: Modern Warfare 2, Valorant, Apex Legends*, and *Escape from Tarkov*) and sandbox games (i.e., *Minecraft* and *Garry's Mod*). Table 4.2 labels the interviews with the topics that participants discussed most frequently.

Characteristics	$\overline{X}\pm$SD or %	Count	Missing
Age			3
≤ 20	18.64 (0.759)	42	
21–24	22.25 (0.775)	16	
25–28	25.50 (1.225)	6	
29–32	30.00 (1.732)	3	
Gender			10
Male	84.2%	59	
Female	0%	0	
Non-binary	1.43%	1	
Profession			7
Student	44.3%	31	
Employed	24.3%	17	
Student & employed	15.7%	11	
Unemployed	5.71%	4	
Geographic region			11
Europe (incl. the UK)	35.7%	25	
North America	32.9%	23	
Asia-Pacific	8.57%	6	
Latin America	4.29%	3	
Middle East and Africa	2.86%	2	
Years of involvement			2
≤ 1	0.78 (0.336)	9	
2–4	2.81 (0.780)	32	
5–7	5.64 (0.790)	22	
8–10	8.80 (0.837)	5	

Table 4.1: Descriptive statistics of participants' demographic variables.

Genre	Game	Interview	Video	Ad
FPS	*Counter-Strike: Global Offensive*	43	48	8
Action-adventure	*Grant Theft Auto V Online*	24	45	1
RPG	*Dark Souls*	1	42	1
	World of Warcraft	1	44	1
Miscellaneous		1	N/A	10
Total		**70**	**179**	**21**

Table 4.2: An overview of the data collected: interviews, gameplay videos, and image-based advertisements. *Miscellaneous* refers to contents spanning multiple games.

4.4 Findings

In the following section, we lay out the PX elements that are influenced by cheating in relation to the GameFlow criteria (Sweetser & Wyeth 2005). We focus on the four elements that have been identified as highly pertinent within the context of this game: challenge, control, player skills, and immersion. The fifth element, social interaction, is discussed in the subsequent section (Section 4.4.2). We reflect on the elements which are not included from the criteria in Section 4.5.

4.4.1 RQ1: What types of play experience exist in cheating and unauthorised modding?

Challenge

An appropriate level of difficulty is necessary to challenge the skills of a player. As one participant noted, games can lose their appeal after extensive playtime: "Games arent fun for some people after 8k hours of playing" (U27), suggesting how experienced players may become bored without new challenges or experiences. The new challenges provided by the cheats and mods can thus make the game feel more stimulating again for the player. The challenge is mainly that of "bypass[ing] anti cheats" (U21) and staying unnoticed by other players or spectators. U9 explains that "playing with cheats makes you aware that people could be spectating you

(*CS:GO*'s Overwatch system) so trying to hide it from a potential spectators gives a different challenge". Moreover, recognising other cheaters in the space while trying to evade detection can also be part of the fun according to U29: "When we run into other cheaters, it is fun to see who will outsmart each other, because contrary to popular belief, cheats do not play the game by themselves, you actually need to have a good strategy, map knowledge, cheat knowledge and etc". This suggests that cheats not only help players improve their performance but also require them to develop new skills in order to use the cheats effectively.

In action-adventure games as *GTA*, players can grow increasingly frustrated or impatient at the seeming delay at which the game progresses (U47): "If I want to no longer travel across the map for 15 minutes, I teleport. If I don't feel like dying on a mission I've played 30 times, I enable Godmode" (U52). U61 claims, "I don't necessarily care to do some of the prep missions involved. The heist setup [mod] or teleporting allows me to quickly get to my main goal". U50 also adds: "the features I use [...] make it easier to get around the map or reduce the time it takes to do fun stuff like buying and customizing cars. Usually you would have to spend quite a while to get the necessary funds to buy the new cars and other vehicles due to the hyperinflation in *GTA V*". For players who are not interested and do not feel challenged in the process of reaching a destination, speedhacks can be used to move at an increased speed and reach the immediate or long-term destinations faster: "I can sit back and eliminate the time-bloat in lots of missions or since I'm bored sometimes, I will play missions in different ways that mods let me" (U52).

The *CS:GO* cheating has a large presence of *Hack versus Hack (HvH)*, which helps keep the game stimulating. *HvH* is a gaming server or a mode of play specifically dedicated to competitive cheating, where players equipped with cheat software gather to compete in a game. The presence of *HvH* demonstrates how cheating is perceived as a legitimate mode of play for these players. *HvH* scene also exists among modders in *GTA V Online* but has stirred more negative sentiments among the players due to the prevalence of server crashing. 'Crash' in this context refers to a situation in which a malicious modder forcibly shuts down another

player's game (U48). U54 explains playing "vanilla" (i.e., without the use of cheats or mods) will make the PX worse off in a game if it already has a sizable portion of modders or cheaters: "you can play the game, grind all you want, but modders will invariably stop you at times, and so will other players, and of course there's the normal difficulty of the game to compete with as well. So now you have a game with a player base all backed into a corner metaphorically until they either play for many hours or just short cut their way to things". This shows that, on top of the challenges faced within the original game, players are also faced with malicious modders who want to disrupt their play experiences. The social aspects of *HvH* are detailed in Section 4.4.3.

Player Skills

Although cheats and mods introduce additional complexities, they can ultimately lead to greater skills development for players. U34 claims that "a lot of people join because they suck; that's true. But just as many join because the edge you get from it. Why be good when you can be the best?" Players also seek cheating as a more challenging way to hone their skills: "I genuinely think that [by] cheating in this game specifically [...] I'm always improving at it, I'm always getting better at it" (U17). U62 explains, "legit" play is much more rewarding for me, recently I have joined a community specifically for high level closet cheaters and it has been exactly what I've been looking for, it gives me the slightest advantage while still letting me learn and become better at the game. [It] let's me be competitive and actually need to try to win but at a higher level than I'd usually be able to". HvH enables players to explore a wider spectrum of skill sets to complement the combats: "you know, whenever you join [an] HvH server on Counterstrike there is a lot of skill that goes into it, and [in] maintaining a high KD [i.e., the number of kills and deaths achieved]" (U17). As such, cheating serves as a means of skills development by allowing players to experiment with strategies and techniques that may not be possible within the boundaries of the original game design.

U24 from *CS:GO* claims that cheating is a necessary part of developing skills because there are already a lot of cheating players who raise the overall bar for competition: "To play CSGO without cheats in 2021 is not possible... this is disgusting for me because you are trying to show that you play better when you are a noob" (U24). When explaining how they first became involved with cheating, U16 recalled encountering other cheaters they could not defeat, "since their cheats [were] stronger/better". Although they purchased cheat software shortly after the match to use against their opponents, they realised that they still needed more practice to win: "I had not much experience with cheats [and] the large number of options just confused me at the time [so] we still lost that game, realizing that there seems to be quite the learning curve and somewhat of [a] competition between cheater[s]".

In *GTA V Online*, players are especially vulnerable to external threats that can disrupt their gameplay experience, prompting them to develop skills beyond those required at a basic level. U47 states, "having protections against crucial harmful features such as crashes, kicks, and any lag is a must". As a result, participants often found themselves inevitably resorting to mod menus as a means of protecting themselves against crashes. According to U46, mods are "just a way of not being vulnerable".

Control

Participants felt a sense of control through cheating and modding in two ways. First, they have a sense of control over the actions and movements they can take as well as the resources they can access. A *CS:GO* player U36 claims that "when you have good cheat like [cheat name] for example, you feel superior and you have control about the game. You can win, you can have fun trolling others, or you can even lose on purpose to make someone mad". U21 shares a similar view claiming that it allows them to "play games the way [they] want". Likewise, a *GTA* player U54 notes "you can get a [mod] and unlock all of the content you'd likely never see if you are not willing to grind for a long time for it all". U57 considers himself a "completionist"

in what the game has got to offer to the player: "when looking for a menu, it is important for me that the menu allows me to unlock 'special' or limited content".

Mods are particularly valuable as they help customise the game to the players' liking. U52 provides an example, explaining that in one *GTA* heist, "you're heavily restricted in how you can engage the objective. Well I flip that all upside down figuratively and instead of walking and sneaking like I'm forced to, I can fly in on a helicopter and spawning bodyguards and enable explosive rounds and cause chaos". U56 says one can also visually flip "the world upside-down like in [the] Doctor Strange movie". Control is not always a means for advancing faster but rather providing the player with the freedom to play the way they would like: "I do admit doing goofy things like transforming into creatures is a lot of fun" (U47).

Immersion

Cheats and mods enable players to break free from the restrictive elements of the original game narrative. U42 from *GTA V* claims that "the lack of progression in the game has made it a bit more boring to play normally, but more fun to play as a sandbox to purely mess about in, it's less serious for me now". In such cases, external resources can further immerse players in the virtual environment, even when they have not yet developed the skills typically expected for the intended player experience. U36 adds that cheating allows them to enjoy the benefits of gaming without its frustrating aspects: "overall I love cheating in video game as a hobby. [It] makes me feel good after a long day of work and I play video without being mad... feel[s] good". This way, even a novice player without a deep understanding of the game mechanic can be exposed to a similar depth of experience that more seasoned players may have. U44 adds that mods in *GTA V* primarily serve to break all the restrictions that exist "in an instant". They explain that modding "is really just one thing, it's freedom [...] With a [mod] you can quite literally do whatever you want, whether that be with good or bad intent".

As a result, cheats and mods also help extend the limits and lifespan of a game as a consumer product: "you can get 'more out of the game'. Meaning if you have

already played through all the available content, you can still have fun with the game" (U57). Participants in both *GTA V Online* and *CS:GO* who spent extensive time on the game felt that there was no more left to the game, and that cheats and mods help "[change] a lot of fundamental parts of the game that [make] it feel like a new game" (U67). Some claimed that cheating could be thought of as a type of "gamemode" (U28) or a "scene" (U27), where "you can change a lot of visual stuff to the game to make it feel new and better looking" (U9). U52 expressed that modding keeps the "game feel[ing] like a second job" by enabling him to "play beyond the boundaries of the game".

Regarding *GTA V Online*, U50 expressed that "[they] have done everything the game has to offer natively", while U8 added that "everyone has already seen whatever Rockstar wants us to see while playing the game". U50 explains: "The DLCs [downloadable content] that Rockstar has made over the years usually don't have more than a few hours of gameplay in them so adding your own things to do keeps things fun. If it wasn't for mods I would not be playing the game anymore at this point". This shows that players proactively search for solutions to keep the game engaging independent of what they perceive the publishers to be doing. Some participants believed that games are ultimately meant to be broken: "when you consider what mods really end up doing, you can follow your thoughts to conclusions and understand that it's all eventually made to 'break' the game. How it is broken is up to the modder" (U54). U57 adds, "there [are] too many possibilities to break the game in a way the developers have not intended".

- **Detracting from immersion:** While cheats and mods can enhance one's immersive PX, they can also bring about its diminishing value. Cheats can make players appear more skilled than they are, and even feel invincible through 'god' mode (n=6). The caveat is that too much can spoil the fun in the long run as the player is not striving to improve. U69 asserts "once you start using cheats it's a bit harder to enjoy a game as they're meant to be played as you know you have the knowledge to gain an edge". As U49 also notes, "when I can do anything [it] mean[s] I can have everything, [and] that

would result in me losing interest of the game [...] you wouldn't want to do anything, no reason to do anything at all", explaining that while cheating and modding can still be enjoyable, the feeling is only "temporary". U52 claimed that "being able to mod this game has made realize why rich people are bored: I have everything I want and have no need or incentive to grind for it legitimately".

4.4.2 RQ2: What kind of social dynamics transpire from the cheating experience?

Participants shared insights into the social interactions which developed as a part of their involvement in cheating and modding.

Competition: Cheater versus cheater

Competition is one of the main social dynamics which pervades the discourse of cheating, inherent to the nature of multiplayer gaming. In the *Challenge* section of RQ1 (Chapter 4.4.1), the participants shared how existing challenges can be made harder to make the game more stimulating. Some players elevate this strategy by establishing their game objective as achieving victory over another player who is also cheating. This adds an additional layer of challenge to the gaming experience.

The unprecedented challenges posed by the *HvH* environment indicate the players internalising cheating as their own means of challenge. A *CS:GO* player, U23 claims that god-like powers are only interesting when it is balanced with the opponents: "it's not interesting when god fights mortals. But when it's God vs God—it's much more interesting. You have many ways of using your power. And [whoever] does it the best way—he wins. But even a god can kill his name and be lowered". Likewise, U34 shares his insights:

> "Some people have even gotten bored from the game, reached the top and had no other reason to play. That's from a closet cheating perspective. Hack vs Hack is like a whole different game mode. Back when HvH first began, it was developers seeing who had the better cheat and when it got bigger it's become users who have the better playstyle pretty much. Everything [about the HvH] is different from the main game[...] It's fun and different[...] just another game to try and get good at".

According to the *GTA* participants, the HvH scene is highly competitive among modders as well. U45 explains, "some modders will immediately see other modders as a challenge and try to crash them; it's like a battle between the protections of one menu versus the other".

Support and camaraderie

Participants' insights into the beneficial aspects of cheating revealed a significant element of mentorship and support (n=9). For instance, participant U44 highlighted that the ability to assist other players was one of the main reasons they chose to mod: "I think modding on *GTA V* is about making everyone enjoy the game a little more, even for players without mods. This can be achieved by giving them money, or by just doing fun stuff like making a racing course with spawned in props in which the whole lobby can participate". U54 similarly describes how they modded with benevolent intentions, trying to "form connections with people by doing things [such as flying people around in a car and enjoying the conversation] that are normally not capable in the game". They claim that this approach was a lot "more favorable and more memorable and worthwhile [for their] time than to just grind and grind and grind because the game eventually just gets boring". Although the participants (n=4) who helped others were not financially compensated for their commitment, they still derived notable satisfaction from it. These responses reveal that, at least in *GTA*, modding is not necessarily just about deriving enjoyment for oneself but also helping others gain a better overall experience.

U46 explains that the social aspect is one of the most meaningful parts of modding: "[modding is] what got me back into the game after abandoning it for a while, and what makes it fun for me is mainly the people I met along the way. Through modding I made what now I can consider close/ very good friends, and that's what [is] nice about it. it may sound a bit confusing, but there's more to modding than actually 'cheating in a game', there's a whole community behind it". U30 explained that the cheating community is "sometimes alot of fun": "You can

probably meet some cool people here but it's really difficult. I [have] only known like 3 guys that I somewhat actively play with still".

Cooperation

Players can reach out to a group of skilled users who can help them achieve the goal of becoming more skilled in cheating: "You will need a team that know[s] how to play CSGO legitimately, train aim and tactics everyday to win the tournament and prize money. On this stage of cheating, you will know some good coders and providers who are [intelligent]. I am not [a] coder but I know where to get good private cheat. That make[s] you want to go deeper in [the] cheating community and want to cheat [in] more games" (U36).

Cheats and mods support social engagement not only within the game but also outside of it, as reflected in participants' use of forums and discussion boards. Participants (n=12) noted that external websites and community boards are particularly useful for discovering the latest cheats and mods. U43 comments, "my friends and I used to mod in all kinds of games so we used to follow certain forums that had mods or scripts for different games. [...] I stay updated because once you buy a license key for the [mod] you gain access to a buyers discord with support channels and things for the menu owners to use and talk to each other with". Fifteen participants claimed that they have developed cheats or mods, or have experience programming scripts to add to the existing cheats and mods.

Conflict

Toxic behaviours were reported to be common among users in cheating forums and peer groups. In *CS:GO*, participants conveyed a lack of trust in servers and users that one would come across while cheating, as they can be turned against them anytime for attacks: "You can't show anything about yourself. If you do, you'll get [...] DDoSed. you have to always put VPN if you're joining someone's server"[1] (U4). U4 claimed that DDoS attacks are common in HvH servers, especially in instances

[1]Virtual private network (VPN) is a secure network service that encrypts internet traffic and masks the user's IP address to ensure secure communication.

where other players are not fond of a specific user: "the admins there can see your IP, and if you're like being annoying, they'll put it in chat and people will DDoS you". This implies that even in an environment filled with players with mutual interests in cheating, they are nevertheless prone to challenges that hinder their ability to access the games. U12 claimed that they have witnessed users get doxxed for simply "asking a question about a cheat". U23 explained that "it is considered... 'cool' to dox, dos, or leak personal information of your 'enemies"', inferring that doxxing can be used to impose dominance by competitive-minded users and shame victims. U25 also mentioned that they made their own communication channel for cheating so that they could keep under control the toxic behaviours targeted towards them, which they encountered even on the day of the interview: "i played hvh today and like 3 people were being super toxic and saying racial slurs to me for no reason".

In *GTA V Online*, crashing opponents' servers was the most common concern among the participants: "A lot of lobbies have kinda toxic modders who will crash your game or boot you out" (U58). In describing common types of modders, U56 explained that the modders who ruin others' experience are the "worst creature[s] ever... [who will] dox other players IP and geo location in public chat... crash other games for their fun even DDOS and shutdown their victims router". U45 recalled how "modding used to be a lot healthier" where "nobody really messed with each other, and when they did it was at most, just blowing them up. now there are menus that can crash players' games and reveal their IP's easily".

4.4.3 RQ3: What are players' perceptions of game publishers concerning their play experience?

Disappointment

Participants (n=29) expressed resentment towards the publishers and content distributors due to their perceived lack of effort invested in the game. They felt the publishers were unresponsive to the persistent issues they tried to bring to their attention. U7 described how it is "really disappointing" that even when a cheat has been clearly available for a significant period of time, it remains undetected:

"somehow [the cheat] still works. it's been like 2 years since it's release. again showing how incompetent valve is". U12 believed that cheating is "epidemic" in *CS:GO* due to this seeming lack of care by the company: "the developer has messaged valve saying 'here please detect this cheat' and literally nothing has happened". Similarly, U7 recalled how they helped built exploits in the past to which Steam, a video game distribution service, did not appear to be responsive in their view. They also recalled a past exploit "where with a simple click the whole game server [can be] turn off for everyone" but took Steam "a year to patch it". As a result, they claimed that their team "resort[ed] to spamming" Steam, and even then "it just [got] fixed in a very half assed way". U7 claimed that they have quit playing the game altogether now, and is now solely involved in online communities helping people cheat in games.

On *GTA V Online*, U54 claims that the "game is decrepit, and was often buggy, and people have to contact rockstar support all the goddamned time. Its not a game like it used to be, where it was somewhat enjoyable... the game became a balance war between certain things", referring to the new game items that they deem unbalanced with the existing ones. U52 discusses how they felt that the players' voices were neglected by the publisher: "the game has depth but in all the wrong places... the [developers] purposely refuse to balance out the game and they finally decide to do some good changes that the players asked for, for a decade right before they announce the next game. That's not right". They believe they can never "play the game legitimately again unless Rockstar made an actual effort to enforce anticheat".

Feeling of insecurity

Participants from *GTA V Online* claimed that players did not feel safe against other modders, and felt the need to cheat or mod themselves to protect themselves and compensate for the lack of protection measures placed by the publisher. U43 asserts that this is a legitimate problem negatively affecting the players that needs to be addressed by the developers: "modders with menus can crash someone's game if they feel like it by sending specific events in the game or spawning objects near them that cause errors and crashes and that runs rampant in *GTA online*.

Menus are the only way to block those events and I'd like for Rockstar to work on that because people can crash someone else's game if they feel like it and just make them have a bad time". U64 also elaborated how they would like to see a departure from the Peer-to-peer (P2P) structure: "its [currently] a direct player to player connection which means anyone with an ip puller or a menu that shows ips can get the IP address of the other players along with the geoip location to possibly use for malicious activities. Only way to really combat this is either use a VPN as a player, or for [Rockstar] to change the game to have users connect to a server and not directly to other players".

In both games, the sense of resentment was intrinsically linked to what participants perceived as the publisher's aggressive drive towards monetisation. U25 in *CS:GO* explains: "the thing is valve... does not care about its own game, only about the money it generates they don't do anything with their anticheat they just want people to be banned so they buy accounts again". In *GTA V Online*, fifteen participants agreed that the publisher "really only cares about money cheats" (U45) for their financial benefit. The participants were unhappy about the amount of grinding that comes expected with the game, and they viewed that this was the result of the publisher pursuing monetary gains. U50 claimed that "Rockstar [otherwise] doesn't have much of an incentive to make actual good new content". U57 also describes: "I feel like Rockstar [...] made it extraordinarily tedious and time consuming to obtain the ingame currency legitimately, in order to sell more 'Shark Cards'. Shark Cards are a way for [Rockstar] to sell ingame currency for real money to the players. I felt screwed over by [Rockstar], who not only sold a full price game but also designed the multiplayer experience around earning even more money from the players" (U57). U52 added that they would like the publisher to "make the game less grindy and not so limited in what to do. The game solely focuses on cash and in-game businesses".

Desired improvements

To consider not modding, there was a consensus on the need for more regular and major improvements on the game: "In a perfect world modding online games would not be necessary but this will probably never happen" (U50). For *GTA V Online*, the participants expressed several areas for improvement in the game, which include the need for a better anti-cheat system, protection against disruptive players, dedicated servers instead of relying on a peer-to-peer structure, game balance adjustments, reduced grinding time for in-game currency, and improved collaboration process for in-game heists. U50 continued to express their desire for the publisher to pay more attention to how the players feel: "I would love for Rockstar to actually listen to the community, not just the modding community but the whole GTA V online community, and address the actual problems with the game... the game still has many flaws that I would love to see Rockstar fix". Five more participants explicitly claimed that they would like the game publishers to pay more attention to their ideas and concerns. U45 adds that despite the corrections made over the years, it is still not enough: "they have improved a lot, only took them like 10 years lol... i doubt they care too much".

4.4.4 Insights from other game genres

The viewpoints of players from other games corroborated the findings of this study.

Challenge The challenge aspect in PX is particularly notable in Soulsborne games, where players are subject to unforgiving in-game deaths and roadblocks by design. Mods are a popular option for players to render such challenges more manageable. In *Elden Ring*, players can 'cheese' the boss to complete missions and enemy fights. This is made possible through design exploits in the given environment, items, and even the setup of the enemy (e.g., luring a giant enemy near a cliff and causing them to lose their balance before falling).

Control Players can gain a sense of control by manipulating the game shell (e.g., the ability to start, stop, and save) to their liking. U68 who is familiar with botting in MMORPG games such as *World of Warcraft* points out, "you have more resources [and] you can translate hours of botting into an increase in your personal resources". They explain: "you feel very gratified knowing that you can skip the boring stupid time gated parts of the game and actually do something else instead [...] It makes you feel efficient at the game. Like you solved the real problem with the game". In line with the previous remarks on player skills and challenges, this view suggests how players take active control in enhancing their PX when they do not feel satisfied with the given mechanics.

Player skills Further, U59 who has experience in both FPS and action-adventure games claimed that the desired capabilities, and thus what is considered skilful, are different depending on the games. Using *Call of Duty* and *GTA* as examples, they explained that players focus on being "better" than others in the former, whereas players focus on "do[ing] whatever [they] want" in the latter. U68, who is experienced with *Dark Souls*, also agree on the freedom aspect being at the core of the experience, though they hoped that the publisher would endorse and support this aspect more: "Unfortunately, unlike skyrim, dark souls is a multiplayer game. Which means letting people add or change code in the game is just begging for abuse from hackers".

Immersion Participants claimed that mods can effectively extend the life of a game, echoing the values of replayability seen earlier in *CS:GO* and *GTA V Online*. Based on their experience with Soulsborne games, U67 explains that the original game should come before any experimentation: "So with any game, you should always play the vanilla version first (vanilla meaning unmodded). Overhauling the game with mods afterward doesn't necessarily make it better, but changes the game. (For example, my first dark souls mod was the convergence for [Dark Souls 3]. It changes a lot of fundamental parts of the game that makes it feel like a new game)".

Social dynamics There was limited data on the social aspect among modders in *Dark Souls 3* and *WoW* but the participants highlighted the significance of online forums as a means to discover and learn new information on the subject matter, as well as to connect with others who share similar interests. In line with the use of online social platforms, U67 commented that they began modding in *Dark Souls* because a Youtuber they follow posted a video showcasing it.

Desired improvements The participants consistently held critical perspectives regarding the demanding time requirements of the game. U68 expresses, "I can partially blame game design for relying so heavily on huge time investments, but at the same time I've been one of those no lifers who puts all the time in, and I think there should be a reward for the guy who sits there and puts 1000+ hours into a game they love", indicating the lack of appreciation felt by some players for their genuine dedication.

Regardless of the player's skill level, some participants suggested that the motivation to cheat arises from the underlying assumption that the original game itself is worth playing. U68 claims that "any game that isn't worth cheating in, probably isn't worth playing" because "the very mechanics in games that encourage cheating, are also there to reward players who do the long grind". Their view reflects on the value of the foundational game mechanics that players consider before making moral decisions to cheat. They add: "you know how you stop cheaters? You make a shit game".

4.5 Discussion

We discuss the interpretations of our findings, assessing how player experiences shape their perspectives and attitudes in games. We then analyse the emergence of social interactions through the concept of social capital within the gaming community, and comment on how the findings tie into the existing literature on GameFlow.

4.5.1 Taking control of the game

In contrast to conventional user-facing products where developers can intentionally shape user actions and emotions, the actual in-game experiences do not always align with the developers' intentions (Hassenzahl & Tractinsky 2006). Developers cannot enforce the enjoyment that players derive from a game; it necessitates reciprocal commitment from both the players and developers. Within the realms of *CS:GO* and *GTA V Online*, players have communicated feelings of boredom, frustration, and eventually resentment, which they attributed to the game publishers and developers. Despite these feelings, their enthusiasm for the game—irrespective of whether they cheat, mod, or neither—encouraged them to craft their solutions. These solutions often found support within their respective social networks. Below, we outline the ways in which players use cheating to regain control in the game:

Increasing replayability. The findings boil down to the desire for more fun and stimulation, which can become lost after a player becomes experienced in a game. This corresponds to the earlier claims from Consalvo (2007), who found that cheating is a playful activity that extends the playable lifespan of a game, referring to how most cheating players originally start playing the game 'vanilla' as seen in the findings. One can argue that cheating and modding are examples of players' attempts to recycle and reinterpret the value of play based on existing game mechanics—especially when there is a perceived lack of support from the publishers—giving them the freedom to decide on the lifespan of a game.

Deflecting the gruntwork. In the context of GTA V Online, our findings reveal that the amount of manual labour involved, such as grinding, plays a significant role in why players turn to modding. Players actively invest their own effort to overcome challenging situations, which may not suit the preferences of everyone. The games examined in this study are designed with an expectation that players will persist indefinitely, requiring continuous effort to perceive progress, which may not be suitable for everyone, such as individuals with limited technological proficiency or disabilities. Without considering the diverse contexts that influence player

capabilities, game developers risk alienating players and leading to disengagement from the games altogether.

Rationalising the act. The findings highlight a close connection between players' negative perceptions of the publishers and their inclination towards modding. It became evident that players believed in-game issues had been neglected for extended periods of time, even when they attempted to report them directly. The perceived lack of responsiveness and actions by the developers creates a sense of disconnect between the players and developers, as if they were working towards different goals. This aligns with previous studies on modding suggesting that modding is justified when developers' actions or native products are considered inadequate (Curtis *et al.* 2022). While feelings of resentment may persist among cheating players to some extent, the ability to mod with a rationalised view towards cheating brings about a more optimistic attitude towards engaging in modding and salvaging what remains of the game for the players.

4.5.2 Cheating as a form of resistance

In the realm of video games, cheat communities embody a resistance to the authoritative narrative and technical constraints established by game developers. The findings indicate that cheating provides a sense of empowerment for players who aspire to transcend pre-existing boundaries of the game narrative, design, and technical limitations. By using cheats and mods, players can fulfil their desires and overcome existing challenges, customising the game experience according to their preferences, especially when they feel that their genuine interests are not aligned with those of the game publishers (V. Chen & Ong 2018).

This is distinct from simply engaging in rule-breaking; the players are actively shaping a new space within the gaming ecosystem that emphasises player autonomy and greater flexibility in the gaming experience. By leveraging their technical skills, much like hacktivists have done in socio-political arenas (Denning 2001; Ames 2018), one may interpret that cheaters are participating in a form of online activism. Their sense of disbelief or dissatisfaction in the system may motivate them to transform

cheating into a new meta-game where players enjoy evading detection rather than adhering to established rules. As video game columnist Michael Thomsen (2013) aptly puts it, cheating entails the "process of revealing the cheapness of the rewards that come from obedience", calling into question whether conventional achievements truly offer genuine meaning or fulfilment for all.

Such activities can also be conceptualised within the concept of counterculture (Turner 2006), as a form of resistance against the prevailing norms and structures imposed by game developers and the broader gaming culture that ostracises cheaters (Blackburn *et al.* 2012). Cheating, in this light, is seen as a mechanism through which players challenge the predefined narratives and limitations of video games to create a more suitable experience—one that can even be more inclusive for those lacking cognitive or sensory development. This aligns with broader countercultural movements that have historically sought to subvert mainstream values and norms, thereby advocating for social justice and the empowerment of marginalised voice[2] (Turner 2006; Jordan 2008; Jessa Lingel & Golub 2015; Jessica Lingel *et al.* 2012).

The concept of technoliberalism, which seeks to liberate human potential and creative capacities, is central to understanding the countercultural significance of game cheating. By pushing against the boundaries of what is considered acceptable or legal within the gaming world, the cheating players are not only seeking personal enjoyment but are also inherently making a statement about the nature of play and ownership in online spaces (Blaukovitsch 2022; Zwart 2009). This form of resistance is a critical element of the broader debate on the governance of online communities and the role of online social platforms in facilitating alternative forms of experience (Krapp & Fischer 2020). As such, understanding game cheating as a countercultural activity sheds light on the multifaceted ways in which players seek to reclaim power and agency within online environments. This perspective invites a reevaluation of the ethical and social implications of cheating, suggesting that such behaviours can actually represent a meaningful form of resistance.

[2]The term 'marginalised' in this context deviates from its typical association with socio-economic disadvantage. Here, it refers to individuals and groups who find themselves sidelined within the social dynamics of a mainstream community.

4.5.3 Building social capital

Players' genuine involvement and willingness to engage with games demonstrate that games can serve a purpose beyond simply providing enjoyment (Sweetser & Wyeth 2005). The findings highlight that game cheating experiences can give rise to competition, support and camaraderie, cooperation, and conflict, making the experience more meaningful. This perspective on social interaction corroborates the notion of gaming capital—a concept introduced by Consalvo (2007) and derived from Bourdieu's original proposition of cultural capital (2002)—which reflects how players advance and derive greater value from a gaming environment. In the context of our work, the findings indicate how the mere act of interaction holds meaning in and of itself, and additionally offers practical knowledge conducive to refining cheating skills.

The dedication shown by players who cheat closely mirrors the commitment of game developers themselves. The concerns they raise and the efforts they make to enhance their gaming experiences highlight that players also have a vested interest in the success of these games, even if their capacity to enact change is limited. This interest becomes evident in the rare instances when mods have been adopted as legitimate software by game companies, demonstrating the value that non-traditional forms of play can bring to the broader gaming community (Scacchi 2011). The development of communities, such as chat servers and discussion boards, further demonstrates how players collectively seek to leverage knowledge and information to enhance their play experience. This perspective underlines the community-centric approach taken in subsequent chapters to examine the activities associated with cheating.

4.5.4 Review of the GameFlow criteria

The findings in RQ1 surfaced the elements the players value highly as a part of the PX, such as having an appropriate level of challenge and more control over the play environment. While the insights from the two games have offered comparable outlooks on the criteria, one must take into account the differing nuances offered by the games. For instance, the concept of control may vary in the two contexts

where players in *CS:GO* may be striving to unlock as many capabilities as possible, whereas those in *GTA V Online* may be interested in approaching the game in a more innovative manner (e.g., reversing the character actions). Despite such variations, applying the GameFlow criteria has proven valuable in comprehending the notion of cheating within the context of playfulness that is central to games.

When analysing the data, we found that these three GameFlow elements were unclear or did not have a significant presence in our data: clear goals, concentration, and feedback. First, goals vary widely depending on players' skills. Because cheating, by definition, overrides the rules of the games, it would be inaccurate to assume that all cheating players seek to win a match or 'crush' others. As observed in the findings and existing work, players involved in cheating can manifest varying intentions.

Concentration was omitted as our study relied on self-reported data, recalling back to the game instead of playing the game in real-time. As a result, it was not possible to fully assess whether the games in question aligned with players' perceptual and cognitive capacities. Future research would benefit from real-time observation of players as they engage with the game to more accurately evaluate this aspect.

Regarding feedback, although the findings indicate that players view cheating as a valid form of gameplay, obtaining concrete feedback on their performance remains challenging due to the absence of formal channels for recognising and evaluating such mode of play.

4.6 Conclusion

This chapter provides insights into the individual play experiences and social dynamics that transpire within games. We observed instances where engaging in cheating within games appeared to positively influence player experience by fostering a sense of autonomy and control, thereby making their involvement feel more meaningful beyond simply achieving victory. The findings also suggest that the decision to cheat is associated with perceived shortcomings and unsatisfactory sentiments towards game providers. In the next chapter, we explore the derivative practices surrounding cheating that have emerged from these interactive dynamics.

5

Participatory Culture of Cheating

Contents

5.1 Introduction

In the past, players shared strategies and tips through hobby clubs and informal networks of friends as a means of finding new ways to progress in games (Tarantola 2019). The rise of online social platforms has drastically changed this pattern of cheating. As with other online communities, the ease of access to information through these networks presents ample opportunities for the discovery of new insights and collaborative knowledge creation (Dabbish *et al.* 2012; Kittur & R. E. Kraut 2008). Many experts now acknowledge that cheating has developed into a significant industry, with unauthorised in-game item sales easily accessible through publicly indexed websites and marketplaces (Maiberg 2014; Pontiroli 2019; Cox 2022). This reflects the diverse ways through which users can engage in cheating.

Much of the existing research on cheating focuses on activities that occur within games themselves, leaving a gap in our understanding of the broader practices and systems associated with cheating (V. Chen & Ong 2018; Doherty *et al.* 2014; Consalvo 2007; Passmore *et al.* 2020; Ribbens *et al.* 2011). This raises important questions about the various roles involved in facilitating, supporting, and benefitting from the practices that enable cheating. Understanding the breadth of these roles and activities will contribute to a more nuanced perspective on the social networks that perpetuate cheating.

The theory of participatory culture provides a lens for analysing how users interact within social platforms that lead to the emergence of new meanings (Jenkins 2006; Jenkins 2008). Often employed in media studies, this theory encapsulates how users with shared interests actively engage within communities by assessing user roles and spaces that facilitate them. Several scholars have examined the concept of prosumerism, in which individuals participate as both producers and consumers within communities, shaping and redefining shared values in the process. Prior research employing this theory suggests its appropriateness in capturing the complexities of social dynamics of cheating that extend beyond gaming environments.

As the second part of the central research question ("*How are game cheating communities established, **reinforced**, and governed?*"), this chapter examines the actors and environments associated with cheating to uncover the extent of the related practices within this domain. The goal is to identify three elements: 1) the nature of the participatory activities, 2) the role of the social platforms in facilitating these activities, and 3) the incentives that drive participation. To achieve this, we aim to address the following three sub-research questions:

4. What activities are involved in the participatory culture of cheating?
5. How do online social platforms assist the means to participate?
6. How does involvement in the cheating culture benefit the users?

These questions are designed to reveal insights that may not be consciously recognised by players who engage in cheating. RQ4 focuses on identifying the activities that fall under the umbrella of participatory culture in the context of cheating. RQ5 delves into the role of surrounding infrastructures, specifically social platforms, in enabling and facilitating these activities. Lastly, RQ6 aims to uncover the benefits that drive users to participate in outlined practices.

In the following sections, we review existing literature on participatory culture, and describe our method for the study. We then present the findings on a spectrum of user participation—ranging from playful to serious, and legal to illegal—revealing implications about individuals who partake in activities that are perceived as more detrimental to the wider online ecosystem. These insights are further enriched

by illuminating the real-world values embraced by community participants, such as building expertise and deriving genuine enjoyment, that diverge from the conventional motivations for cheating. The study also uncovers the role of online social platforms in providing a space insulated from the typical criticism and judgement directed at cheaters by non-cheating players and game developers.

5.2 Participatory Culture in Online Communities

Participatory culture is a popular theory used in media studies to explain how users meaningfully take part in shared practices. It describes a culture in which users experience a sense of social connection and attach significance to their contributions within the community. Plentiful case studies have been carried out applying this theory to online communities, including video sharing (Burgess & Green 2018), fan fiction (Evans *et al.* 2017; Fiesler, Morrison, *et al.* 2017), and software development (Arciniegas-Mendez *et al.* 2017). It has also been of growing interest in game studies in recent years, on aspects of modding (Poretski & Arazy 2017; Thiel & Lyle 2019) and streaming gameplay (Pellicone 2016).

Jenkins (1992/2012) originally introduced the concept of participatory culture as a type of "fandom", which blurs the line between cultural production and social exchange among fans. The term 'culture' here represents "the sum total of human experience" (Jenkins *et al.* 2015), building on R. Williams' work (1983) on cultures. Over time, the concept has evolved to encompass the adoption of networked technologies and online communities, which have ushered in alternative ways of engaging in shared practices. Yet, by adopting this theory, Jenkins and his colleagues (2015) emphasise the importance of comprehending the socio-cultural contexts that encompass shared norms and values, rather than solely focusing on technological aspects. Jenkins (2009) lists the conditions for a participatory culture as follows:

1. It has relatively low barriers to artistic expression and civic engagement,
2. It provides strong support for creating and sharing creations,
3. It provides an informal mentorship whereby experienced participants pass along knowledge to novices,

4. Members believe their contributions matter, and
5. Members have a degree of social connection with one another.

The conditions demonstrate two common themes—technical accessibility and social exchange—that are observed in the existing literature of online communities (Matias 2019; Wohn 2019; Evans *et al.* 2017).

A possible alternative to participatory culture is Wenger's concept of communities of practice (2000), which offers valuable insights into knowledge sharing and learning within more structured or institutional contexts. While this concept is well-suited to formalised environments, the perspective of participatory culture more effectively captures the fluid and often informal patterns of engagement that characterise participation in these communities. This makes it a particularly suitable framework for analysing the distant modes of participation within these communities, such as lurking.

5.2.1 Prosumerism

Technological advancements have expanded the possibilities for more meaningful forms of participation, encompassing activities such as "interpretation, production, curation, and circulation" of media, beyond the initial intentions of the designers (Jenkins *et al.* 2015). Jenkins distinguishes between interactivity and these modes of participation, noting that the former relates to technological capabilities that facilitate meaningful choices for individuals, while the latter pertains to cultural factors that shape shared experiences. Within this context, the act of participation is seen as contributing to a collective "process of deliberation" within the community, oriented towards a shared purpose.

Jenkins and colleagues describe that fans—the devoted followers of media texts—do not only act as "consumers of mass-produced content but also as a creative community that [take] its raw materials from commercial entertainment texts and [...] [remix] them as the basis for their own creative culture" (Jenkins *et al.* 2015). The consumers are no longer passive, and have the choice to engage in creative work themselves, fluidly engaging with it either as a consumer or a

producer (Jenkins 2008; Boyd 2010). Such users playing the dual role are referred to as "prosumers" (Toffler 1980).

Existing literature highlights several modes of engagement, particularly focusing on two distinct roles: moderators and content creators. Moderators have garnered considerable attention due to their direct impact on curating content and shaping activities within a community. Moderation is defined as a set of "governance mechanisms that structure participation in a community to facilitate cooperation and prevent abuse" (Grimmelmann 2015). Moderators have a multifaceted role in communities, overseeing content, promoting social support, and even leading social movements when required, using the control they have over community rules, content availability, and are responsible for onboarding and supporting users (Butler *et al.* 2007; Seering, T. Wang, *et al.* 2019; Matias 2016). Moderators also play a key role in recruiting newcomers and overseeing their social engagement within communities (Butler *et al.* 2007). Wohn (2019) identifies four roles that moderators adopt in Twitch, a streaming platform: "helping hands", "justice enforcers", "surveillance units", and "conversationalists". These moderators, who are typically volunteers, are often motivated to take on such roles by internal values such as social recognition and personal ideologies. Matias (2019) introduces the concept of moderation as a type of "civic participation" pointing to leadership and management being a key component of communities. Inspired by the work of Butler and colleagues (2007), Matias discusses how moderation work is viewed as a labour of "community maintenance" involving the "challenge of developing and maintaining their existence". We will revisit these concepts of moderation in the subsequent Chapter 6 where we delve into the governance mechanisms of communities.

Content creators have also played a prominent role in participatory culture in the recent decade. The immense popularity of Youtube, in particular, has paved the way for the type of roles unprecedented in other social platforms (Netzorg *et al.* 2021). While it is a video-sharing platform, its additional capacity to interact with others has opened up ways to re-imagine social interaction. Amateur users possessing relevant skills and knowledge may emerge as 'influencers', creating

distinctive content that attracts substantial audiences. Their status as influencers is often determined by quantifiable metrics such as the volume of content shared or the number of views received. Those who fail to amass a large audience are often recognised simply as content creators rather than influencers. Despite their lack of popularity, these individuals bring valuable assets to the platform by freely sharing personal experiences and fostering learning opportunities for others (Chau 2010; Burgess & Green 2018). Weber and colleagues (2021) distinguish between the external and internal aspects of content creators, mentioning that the latter remains underexplored. While the external aspects are concerned with quantifiable measures—such as audience size, number of views, or content output—internal aspects focus on the subjective experiences, motivations, and self-perceptions of the creators themselves, including how they interpret their roles and the meaning they derive from participation regardless of external recognition.

In addition to formal participation, informal modes also play a role in shaping communities. For example, some experienced or knowledgeable users engage by offering assistance to novices (Evans *et al.* 2017; Fields, Pantic, *et al.* 2015). Ethnographic research conducted by Evans and colleagues (2017) in fan-fiction communities revealed a distinct form of mentoring which they referred to as "distributed" mentoring, which is characterised by many-to-one or many-to-many exchanges. This allows participants to benefit from a wide range of perspectives and experiences rather than relying on a single mentor, and demonstrates how members leverage the affordances of networked technologies to facilitate collective support.

Overall, the observed actors can be categorised based on the four mechanisms outlined by Jenkins *et al.* (2009):

- Affiliations, which express an interest-driven aspect of the culture (e.g., lurkers and followers in social media),
- Expressions, which define the production aspect of participatory cultures (e.g., content creators),
- Collaborative problem-solving, which supports the knowledge-building aspect of the culture (e.g., moderators and administrators), and

- Circulations, which support the networks through which interactions and information flow (e.g., users who re-post contents).

Outlined in the original white paper for youth development, these mechanisms also apply in other contexts to enhance the collective well-being of a community (Jenkins *et al.* 2015).

5.2.2 The spatial dimension

Online social platforms play a vital role in facilitating media engagement. By enabling content producers with various goals, such as mentors and vendors, to coexist and collaborate, these platforms create dynamic environments where multiple forms of media intersect (Benkler 2007). According to Ito's research on participatory culture, platforms such as YouTube are part of a larger "ecology" of openly networked platforms that support amateur media sharing within communities (Jenkins *et al.* 2015).

Within interest-oriented communities, digital platforms serve as dynamic spaces that effectively facilitate interaction among users with shared interests. Gee (2004) characterises these platforms as "affinity space[s]" where individuals come together based on "shared activities, interests, and goals" rather than common demographics. This perspective resonates with Durkheim's work (1964) where he describes that communities in contemporary societies emerge from shared skills and interests. By reconceptualising culture and community as spaces, Gee argues for a more flexible understanding of user participation, accommodating varying levels of engagement. An analogous concept is 'third places', which represent settings where social interactions occur, such as shops and bars in offline contexts. Oldenburg (1999) claims that "individuals may belong to several formal organisations but if they have a third place, it is apt to make them feel more a part of the community than those other memberships". The concept has been applied in the context of multiplayer games (Ducheneaut *et al.* 2007), live streaming service (Hamilton *et al.* 2014), and Twitter chats (McArthur & White 2016). Hamilton and colleagues (2014) found that active participation of streaming viewers on Twitch created an

informal community separate from the actual game world, which viewers felt lacked agency. While streaming offers a window into the gaming experience, they claim that Twitch as an intermediary medium sets a "special space somewhere outside that of the game's, yet still separate from the rest of the world".

5.2.3 Summary

The literature review of participatory culture highlights the opportunity to understand the informal structures surrounding cheating. These modes of participation rarely present within typical gaming platforms can indicate the values and opportunities the users share about cheating. The participatory culture angle aptly allows us to enrich the scope we have set out early in the thesis with alternative ways to delineate an active space of users associated with cheating. Further, while experts have started to look towards platform-based communities as a means of understanding community values (e.g., Twitch and Discord), the nature of the platform is rarely explicitly taken into account in the analysis (Pontiroli 2019; Maiberg 2014). This is important because the choice of the platforms wherein the users engage can indicate what they most value and prioritise as part of their shared practices.

5.3 Methodology

We employed a two-fold interview study that serves as the foundation for the data presented in Chapter 5 and 6. The themes identified in the initial phase of the interview study guided the focus and findings in this chapter. Here, the theory of participatory culture served as the guiding framework for both the data collection and analysis.

5.3.1 Data collection

It is important to note that our methodology was originally designed to explore the underlying structures of governance within game cheating communities. To this end, we conducted an interview study with individuals actively engaged in cheating in *CS:GO*, a highly popular competitive FPS game. During the analysis

of the data collected in the first phase, we recognised the significance of outer-game structures, both social and spatial, in the context of cheating. While these aspects were important, they appeared to be tangential to the core concept of governance. In light of these findings, we reorganised our thesis to first present the descriptive components characterising these communities, and subsequently explore the overarching governance mechanisms in play.

Reaching the population: During the initial phase of the data collection, we recruited participants through Reddit using purposive and snowball sampling techniques to reach a suitable population that aligned with the scope of our research (Patton 2002). Because game cheating represents a niche within the broader gaming domain, with a participant pool that is less accessible than that of mainstream gaming, this approach served as an initial means of identifying other viable channels for participant recruitment. From October 2020 to July 2021, we disseminated participant surveys and initiated outreach via the message feature within dedicated Reddit forums (*r/csgohacks*). We initially relied on the author's situated knowledge of game cheating based on the literature review, anecdotes, and search engine observation to consider recruitment platforms. As the data collection process progressed, the author developed new contacts through participants to expand the sample pool. Overall, Reddit served as the primary platform for recruiting and identifying potential participants, while Discord was mainly used as the medium for conducting interviews.

In the second phase of the study, we contacted users in prominent roles or with specific responsibilities in the community through direct outreach and moderator recommendations. For roles such as streamers, developers, or moderators, the researcher sent introductory messages on the relevant platform, explaining how they were discovered. Snowball sampling alone would not have been sufficient to reach saturation due to the specialised nature of these roles. The first phase of the data collection focused solely on *CS:GO* players, while the second phase included users with experience in cheating-related activities, though not necessarily cheating themselves (see Section 3.3.5 for details).

Interview questions: The interview questions in the first phase of the data collection were set around the governance elements outlined in Section 6.3. These questions were semi-structured to allow participants to provide open-ended responses. Through these interviews, the author gained a detailed understanding of the practices within the recruited platform, which informed and improved subsequent participant recruitment strategies. In the second phase, the interview questions were tailored to address the concepts of participation and labour—guided by the theory of participatory culture (Jenkins 2009; Jenkins *et al.* 2015)—and were refined to align with the specific roles that participants had experience in. These questions explored their motivations for engaging in the community, their daily activities, compensation mechanisms, social networks, and any positive or negative experiences related to their involvement:

- What attracts you to this cheating community?
- What kind of roles do you currently undertake?
- What led you to your current role?
- What does your work entail? Do you outsource any part of the work?
- How do you collaborate with others? Are there preferred platforms you use?
- Are you financially compensated for your work?
- What challenges do you currently face and how do you work around them?

Inclusion criteria: The inclusion criteria of the interview were to either 1) be 18 or over, 2) have experience engaging with the *CS:GO* cheat community within the past ten years, and 3) speak English. The interviews lasted between 25–50 minutes, and were either carried out via text or audio, which were transcribed afterwards. Before the interview, we informed the participants of the purpose of the study and the risks through an external participant information form. We initially confirmed the eligibility of their age, and collected their consent for participating in the study. There were no financial rewards for participating in the study. We also collected background information on gender, age, country, and employment status to contextualise the interviews. To be able to follow up with participants or allow them to follow up with the interviewer, we allocated unique IDs to make them

identifiable to the initial username used, as users have been known to change them over time. No personally identifiable data were collected aside from the username.

Before the coding process, the author thoroughly familiarised themselves with the data and annotated it in real-time. This approach, commonly employed by qualitative researchers, was crucial in our study due to participants' diverse experiences, varied jargon and expressions, and contrasting perspectives on cheating (e.g., "this is the best cheat ever" versus "players who use this cheat are losers"). All annotations, data, and memos were then imported into NVivo for analysis.

5.3.2 Data analysis

Following the same steps as the preceding chapter, the approach to coding and analysis was primarily grounded in Jenkins' theory of participatory culture (2009; 2015). We developed a codebook that reflected the theoretical propositions based on the literature review, which initially consisted of *civic/artistic engagement, artistic content sharing, belief in the value of contributions, prosumerism, mentorship, amateurs, in-between spaces*, and *social connection*. The term *in-between spaces* refers to online environments that do not directly focus on the primary subject of the game, yet maintain a tangential association with it. Using this guide, we then searched for elements in the data that either echo or diverge from the codes. During this process, we also coded the emerging patterns, which in particular offered nuanced insights about player perceptions associated with the practices. The coding process underwent three iterative cycles. After each cycle, the remaining codes were assessed in relation to the research questions to determine their relevance and alignment. Following the final iteration, codes were systematically organised within the revised codebook, categorising them according to their relevance to each respective research question. Finally, the analysis process resulted in eight themes for RQ4, five themes for RQ5, and three themes for RQ6, which we uncover in the Findings section. The results of this analysis are displayed in Figure 5.1. The codes within each thematic category are sorted by frequency, starting with the most prevalent code at the top.

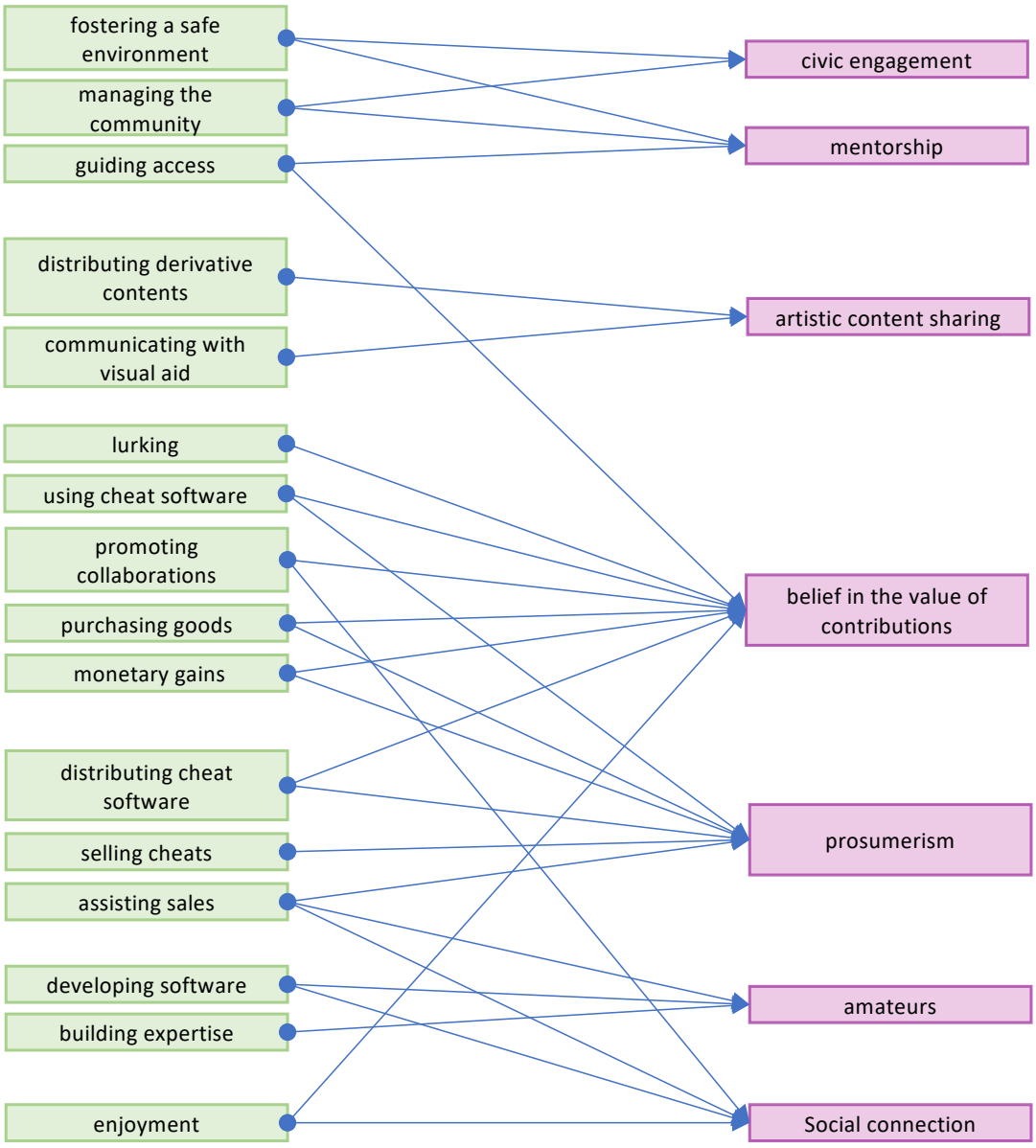

Figure 5.1: Codes and themes from analysis with the participatory culture framework.

5.3.3 Sample overview

We conducted interviews with a total of 43 participants, with 38 participants interviewed through real-time text chat and 5 interviewed via audio call. The age range of our sample was 18–24, and the self-reported gender distribution consisted mostly of males, except for one participant identifying as non-binary (see Table 4.1 in Section 4.3). All 29 individuals who disclosed the age at which they began cheating reported starting while they were still minors, corroborating the

perception of a prevalent youth population in gaming (Przybylski & Weinstein 2017). One participant reported joining the cheating community as early as 12 years old. Within our sample, 14 participants had experience as moderators, 8 as developers, and 7 as content creators. On average, participants had 3.82 years of experience in the community (SD=1.59). Demographic details of the participants are provided in the Appendix in Table A.1.

5.4 Findings

5.4.1 RQ4: What activities are involved in the participatory culture of cheating?

The findings uncovered eight distinct modes of engagement with cheating, encompassing the distribution, use, and communication of cheat-related products. These activities can be categorised along a spectrum of legality and playfulness (Figure 5.2).

A. Lurking

Passive signals of demand for cheating can be observed in user behaviours such as lurking within online communities. Lurkers in this context are individuals who observe cheat-related media without actively engaging in participation. Although they may not contribute significantly themselves, their mere presence in large numbers can influence others. Numerical indicators such as membership counts, likes, and view counts indicate a level of interest in a particular content. For moderators and those in more active management roles, these indicators can help determine the relevance of content for the community. Participants who portray a sense of ownership in the content they have developed or shared, such as software or video content, tend to be particularly interested in views or user counts.

Some lurkers exhibit minimal presence, only returning to the platforms when they need specific information and disappearing until the next time they require it. U18 distinguishes users who actively cheat in games and those who merely lurk in the forums: “It’s the users that never go on the forums, pay their monthly subscription, come back only to pay their subscription, but hang out in [the] game

24/7. Like I can generally tell you that 90% of these people are in their parents' house, in their parents basement [with] nothing better to do in life". The lack of active contribution from these users is seen as a point of criticism by those who value more active engagement.

B. Using the cheat software

The act of cheating is at the heart of the community of cheating. Some players openly engage in cheating practices within games, such as rage cheating, thereby signalling their interest in cheating to others—particularly in HvH servers. The act of setting up or playing on these servers further reinforces the perceived value and desirability of cheating among players by fostering exposure and normalisation within the community.

C. Distributing derivative contents

Users actively contribute to the community by creating and sharing a range of derivative content related to cheating, including memes and advertisements in both image and video formats. These materials circulate through discussion boards, chats, and public-facing social media channels, with content creators specifically focusing on material centred around game cheating. In the context of cheating, 'media' primarily refers to video recordings that present the game from the player's perspective, offering a first-hand visual account of the in-game activities. These videos convey an intuitive understanding of the gaming situations, surpassing the common limitations of static text by immersing the viewers. Among the participants, those involved in content creation predominantly used YouTube, and expressed that they gained genuine enjoyment in their activities. For example, U27 claimed: "As long as the cheating in *CS:GO* is still relevant and i am still having fun making videos about it then i am gonna continue uploading and making content", while U18 echoed a similar sentiment.

> "For the whole cheating thing, I definitely would have stopped if I didn't continue with my YouTube channel[...] It's not even the content that I enjoy. I enjoy the interaction—if that makes sense. I like editing.

> I like doing all that kind of stuff. [As] one of my side jobs, I built really expensive computers for clients, and I think it's overall like taking something you do everyday but putting it out on the Internet for people to see [which I enjoy]".

U18 stated that they transitioned to creating content for YouTube full-time at the age of 17 due to the high profitability of selling cheats during that period and the role their videos played in boosting sales.

D. Purchasing goods

Players who acquire cheats through paid services contribute to the sustainability and growth of cheat-related businesses by demonstrating demand and driving sales. This dynamic incentivises skilled professionals—such as software developers and testers—to lend their expertise to the industry for financial gain, even if they have no personal interest in cheating themselves. Moreover, sharing information about the purchase of paid goods among players demonstrates a readiness to actively engage with external commercial services to enhance gameplay, thereby drawing the interest of both potential consumers and suppliers within the surrounding ecosystem.

E. Managing the community

Moderators are responsible for upholding community rules, enforcing norms, and managing available resources within their communities. They curate and screen uploaded content to ensure only relevant material is displayed in their communities. Additionally, they offer support to new members by addressing queries and directing them to relevant sources of information. U5 shares their experience as a moderator:

> "A main part of moderation is checking uploaded files to ensure that they are safe. I'd say we want to make sure everything we upload is high quality, but often people upload messy cracks that require weird use, or code that crashes frequently. Really we just try to make sure everything is at the very least safe to run. I'd say what I mainly contribute is that people can message me for help and I don't just ignore them. I make an effort to always answer every message that I get".

It was inferred that effective moderation requires providing active support. Participants with experience in community management emphasised that moderators should demonstrate their competence through consistent and visible engagement within the communities they oversee. One participant (U18) mentioned, "I upload daily. So I play with people [who] use my own cheats. I talk to them. I help them, I give them support" (U18). According to another participant (U22), a worthy moderator should possess knowledge and expertise, assist newcomers with issues, create high-quality and engaging content, avoid toxic behaviour, and maintain an active presence in the community. Examples of contributions in a broader context include developing and distributing new cheat tools (U14), operating businesses centred around cheats, and consistently monitoring the quality of these tools.

Moderators typically contribute to their communities on a voluntary basis, without receiving financial compensation. U34 who has extensive experience moderating across different channels claimed that they were not compensated until they decided to collaborate with a friend to sell their configurations: "I was 17 at the time and really liked money—it wasn't something I thought people would purchase because it's literally just moving sliders / trial and error but a lot of new and also veteran players ate it up". U31 who used to be a "community manager" for a defunct cheat tool shared that they managed to find a way to be compensated: "it was fun but required more time than I was willing to provide. I was initially offered free access to the cheat as compensation but was able to talk the admins into paying me actual money after they saw the quality of my work and how dedicated I was to their community".

F. Distributing software and scripts

Users can also engage in the community by releasing software and scripts. While disseminating high-quality cheats is generally regarded positively, individuals commonly referred to as pasters are often viewed unfavourably for relying solely on others' work without contributing themselves. Pasters are perceived to be 'lazy', copying code from others, often with the intent to disguise it as their own and

profit from it. According to U14, the act of pasting is likened to "begging for spoonfeeding", as individuals who engage in pasting are perceived as being "too lazy to code [...] themselves". This behaviour is strongly frowned upon within the community, and individuals associated with pasting are likely to carry that reputation for an extended period unless they change their online identity. U17 comments: "it's a huge no-no on the community. And you'll be regarded the paster for as long as you live. Unless you change your alias and start fresh obviously. But the pastes are a huge part of the community and not necessarily [in a] good way".

Crackers are users who analyse released cheat software with the goal of identifying plagiarised ('pasted') or vulnerable aspects. They 'crack' cheat software by reverse-engineering it or exposing its vulnerabilities (n=9). Some crackers aim to make paid or private cheats more accessible and make them free for others to use: "A lot of these people will try to do something called cracking a cheat which is getting past the loader security, making it so that it's free for everyone to use" (U18). Others crack cheats to expose plagiarism or poor quality: "When someone's selling software that's clearly pasted off someone else's code, I always try to crack it so it's free and public so everyone can see how bad it is" (U12). However, it's important to note that reverse-engineering someone's cheat is generally prohibited in cheat-related forums and groups.

G. Developing software

Users can actively contribute to the community by providing new resources for other users. Cheat developers play a significant role in the community by designing and creating software for game cheating. They are highly respected for their tangible contributions, which often have immediate practical applications within games. U10 claims they "believe the developers are the biggest members in the cheating community. They are the highest tier in my opinion. Most of the players run around with cracked cheats and just have fun. But these people take it to another level, debugging their cheats for hours, spending hours making cheats, and then profiting highly by them". This dedication sets them apart and elevates their status within

the community. U35 claims that "most people will respect someone who has made some really nice or hard to make 'tools'" as a contribution to the community. U2 recounts how they got involved as a developer: "I was looking for free cheats so I googled 'free cheats' and the Google SEO led me to [redacted cheat name]. This piqued my interest and a few months later I began paying for actively developed and maintained cheats—later becoming a cheat developer myself".

Beta testers also play a significant role in the development process by thoroughly examining the tools for errors or bugs before their official release. These testers, often part of the alpha and beta teams, are granted higher priority and early access to the tools (U17) "to test all the features and provide feedback" (U29). This role requires a certain level of expertise in cheating and software development, as beta testers must have a keen eye for details that an average user may not notice easily. In return for their contributions, beta testers are typically compensated with benefits such as free access to the cheat software. In some cases, if the cheat software becomes highly successful, additional compensation, including financial rewards, may be provided (U30). U20 also highlighted that being a beta tester can lead to receiving invitations to other forums, further expanding their network and involvement within the community.

While not as directly involved in the development process, some participants (n=16) claimed that they have experience tinkering with the scripts: "I've made [...] Lua scripts and Java scripts for cheats to change aspects of them, but I've never developed [one] my own" (U33).

H. Selling cheats

Some users are involved in the supply-chain aspect of cheat products. They handle monetary transactions, technical backend operations, and sometimes even legal compliance, enabling them to independently host and manage resources (U18). For example, U13 developed and showcased their cheats on a website they created: "well, i've set up the website myself, after that it's just a matter of setting up security and writing the cheat/loader. it's really not that hard [to be honest] except for writing

a good cheat/loader of course". Trustworthiness and the integrity of the products are crucial factors for effective cheat sales. According to U5, "when it comes to [business] partners or partners in general, they must have a good reputation already. [For instance,] the products like cheats they offer aren't malicious or anything and should be known for how good their cheat performs".

Financial considerations play a significant role in the management of cheat-related game servers (i.e., HvH servers). U23 shared insights into their server management process in Russia: "Servers to keep up the stresser were bought using illegal way. Some credit card [...] frauds. I am not involved [in] this and this is still a big secret for me, but [the] lead keeps giving me subscription for it". This suggests that individuals involved in the business may have indirect associations with other forms of potentially illicit activities.

Although not given formal recognition, resellers are also considered facilitators in providing peripheral services within the game cheating community. U30 mentions: "they can give you a sub through payment methods not accepted by the admins. The resellers of course take a cut from that money and can probably make a good living".

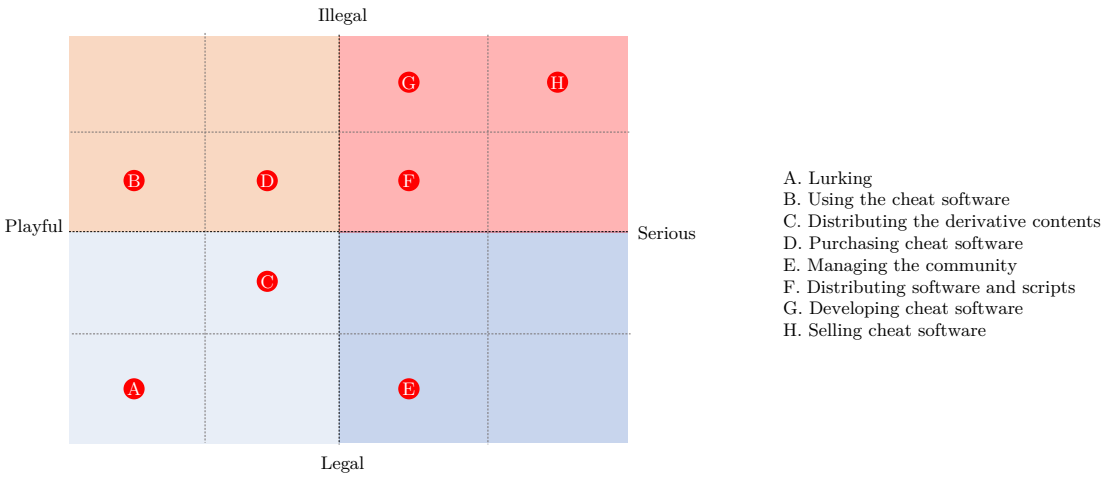

Figure 5.2: Modes of engagement in the participatory culture of cheating.

5.4.2 RQ5: How do online social platforms assist the means to participate?

Online social platforms play a crucial role in facilitating the aforementioned modes of participation in the community. These platforms provide dedicated spaces that support five key modes of engagement: 1) fostering a safe environment for exploratory gaming, 2) guiding access to information and social networks, 3) communicating with visual evidence, 4) assisting with sales and product distribution, and 5) promoting technical collaborations. In the following sections, we provide examples to illustrate these modes.

Fostering a safe environment for exploratory gaming

Participants highlighted the significance of dedicated game servers which create a playful environment exclusive for cheaters, managed by cheaters themselves. In HvH servers, players utilise cheat tools to compete against each other. The HvH servers intentionally disable commonly used anti-cheating software, allowing for the unrestricted use of cheat tools. As such, players are able to focus only on the "pleasurable" (U9) aspects of game cheating, without being concerned about being banned. Within HvH, there is a mode called "legit HvH" where players use cheat tools but without employing obvious, blatant features (U1). U16, who claims to be one of the early pioneers of HvH servers in Asia, shared valuable insights on how they attained their current position within the community:

> The position came really natural, it started from us getting 10 people together and queuing in official match making server to cheat against each other in 5v5 matches since there [were] no HvH server in asia at the time, some day we just thought why not make a community server for that and bought a server and set it up. from there it has just grown over the years and being one of the early people who started hosting and getting the community together in asia. I just naturally grew to be in that position.
>
> We just rent server like any other community that provides game server would, without any compensation as we dont like the idea of donations for a vip rank (we are cheating but we want it to be a fair even playing field). we just finance it from our own money and have keept it that way since just because we love it.

These insights suggest they have their own intriguing standard of fairness—choosing to fund everything themselves so that the players compete on an even playing field, even as they are technically cheating.

Guiding access to information and social network

Online forums encompass a wide range of discourse surrounding cheating, ranging from technical inquiries about tool usage to public announcements issued by prominent community figures. These forums can be found on popular social media platforms such as Reddit, which attract a large audience for open discussions. Additionally, there are independent websites specifically dedicated to hosting forums, several of which are publicly accessible (e.g., MPGH and Unknowncheats), while others require registration (e.g., HackForums). Despite their operational differences, these platforms share consistent logical interfaces, featuring main pages with the latest updates, dedicated channels, and threaded discussions beneath each content.

Participants (n=21) acknowledged the ease of accessibility and the value of obtaining cheating-related information from public platforms. U12 recalls their early days of cheating: "I was playing a casual match and some dude was spamming some free cheat link, and I wanted to try it out but I wanted to do some research first before running random programs. I found the sub that way and when I was learning how to code [cheat] a little bit, i found [website A] to be a good resource". The variety of forums at their disposal meant that users can move between multiple platforms to gain and evaluate information on specific aspects of cheating: "i usually trust the admins and if they arent trust worthy then i would just go to a forum that i can trust [...] for getting information, unless you 100% trust the source just ask the same question in different servers/forums" (U3). U21 claimed that these platforms are also an effective avenue for forming bonds that mutually benefit one another in developing skills around cheating: "although most people are toxic in game[s], people are really helpful in those forums [...] I still play and 'code' with most of the friends I made. Most people that I've met on [website B] helped me set up everything I needed, be it anti-cheat bypasses or the cheats themselves". U3

claimed: “ive come to find these websites ([website A], discord , reddit) from my gta modding days because all of these places are the best ways to get info from people”.

There are also ‘leaking’ forums dedicated to releasing cheat tools and configuration files which are otherwise hard-to-access or costly. These forums (e.g., ‘nulled.to’ or ‘void.to’ as of the time of writing) also feature leaked software or accounts that extend beyond gaming. Some participants disapproved of the leaking activity and expressed their dissatisfaction with such forums (e.g., “there are some ghetto forums for leaking only that i dont like” (U11)). U5 claims that such forums are popular by “younger kids or the mid teen ‘hello world’ programmers who send other people’s malware [...]. So you get people to send the malware and people to download it and it’s harder to recognize them. Since the conversation is less fluid. We don’t really get as much back and forth”. Some public discussion forums “[are] against cracking / leaking of other peoples software without their consent”. The divergent views on leaking within the cheating community reflect the varying opinions users hold regarding the permissible means of acquiring cheating products.

Furthermore, real-time chat enhances the multiplayer gaming experience by enabling seamless team communication. In Discord, users can create their own subcommunities through servers and invite others to join. Within its servers, dedicated channels can be established to focus on specific topics. Participants who developed their own cheat tools often set up dedicated chat servers to gather supporters and foster relevant discussions around the tool: “discord is the place i talk the most. mostly just on the discord servers i have cheats for” (U3). U34 claims: “Discord allowed real-time support, ability to go into a call and work out problems 1-on-1 but it’s just all-around a better platform than a website could be because of the desktop application, pings, and how frequently it’s used by most [users]”. Several participants expressed their preference for Discord when it comes to having a direct conversation:

> “I avoid things outside of discord or matrix. Those communities are usually overrun with people who have no desire to learn[...] There are definitely other tiers inbetween, but the biggest difference is the fluid conversation. it’s much easier to talk to others. On forums, conversation is very choppy” (U5).

> "When my discord server was a thing, i would tell people that if they want to play with me they can join the voice chat and play random games. if i get along with the people there, i might talk to them again and develop a friendship. i met some really cool people that i talk to for a long time and i usually dont talk to people from the hvh servers in *CS:GO* themselves they usually find me through my channel" (U27).

U5 described the ability to "start conversations for no reason" to be a unique aspect of Discord that distinguishes it from other discussion forums.

Communicating with visual evidence

Non-textual communication is just as prominent in game cheating, often taking the form of images, videos, or GIFs. The purposes of these media vary widely, ranging from providing additional context to accompanying text to conveying humorous memes. Notably, media creation is an important way for individuals to promote their status or programmes within the community. Videos were the most common form of media, with Youtube being the most popular platform for hosting this content. The gameplay featured in these videos typically takes place in either normal matches or HvH matches, serving to demonstrate the skills of a player or showcase the capabilities of a particular tool. According to U32 who used to share HvH highlights on their channel, "it's just fun, and the footage I used was clips from [within the] game so I wasn't going out of my way to get the footage". U27 elaborated on the process of creating a high-quality video for a YouTube channel, emphasising the importance of factors such as recording gameplay, editing the footage, and incorporating music, while U25 specifically highlighted the role of selecting suitable thumbnails.

Many of the participants who already had an external sub-community dedicated to their own cheat software would leverage content sharing on Youtube to spread the word: "first i just made cringey videos that give people [configurations] for the cheats so i can get members for my discord server and they did really well. i just wanted members in my discord servers" (U25). U27 also runs a Youtube channel dedicated to a cheat which they developed: "I wanted to make myself known in this community, also one of my best friends at that time was doing it as well, so i

thought it would be cool to try do that myself [...]. My goal is to be a very known person in this community, my dream is to achieve 10.000 subscribers". U23 referred to media as an "advertisement for [the] player and for [the] tool".

There are other added benefits of media sharing according to the participants. U24 described how "with the help of these videos [they] got acquainted with a lot of big names (in hvh the term big name means that a person is famous and plays pretty well)", and also how the use of "screenshots of [their] victory over [opponents]" can "solve any insult in [their] direction". U24 explains: "for example, some schoolboy started insulting you on the server and you can call him [on] 1x1,2x2,5x5 [player matches] and after that, to prove your victory, they shoot a video about how they won it. And there are cool moments where you gave a lot and nice kills". U23 uses the term "anti-media" to refer to content that can demonstrate "that you're better than others". These insights suggest that media sharing plays a key role in providing evidence of a player's skills.

Assisting with sales and product distribution

Certain platforms provide a dedicated space for vendors to provide detailed information about their software products. These software products are typically developed and sold commercially through subscription packages. Once users register and gain access to the software, they can explore internal features to access more relevant information. The main website is typically managed by administrators who are often also the developers of the software, and they invest significant time addressing user inquiries. Such platforms also include a forum feature that serves as an independent interaction space focused on ongoing discussions related to the usage of the software. Here, the notion of a 'space' is reflected in how participants perceive the community surrounding a particular cheat tool. U15 explained: "each cheat has its own community, if that makes sense. So [product A] has its own [...], think of it as cliques in school [...]. So there's a [product A] group, there's [product B], there's [product C]. Then there's like private cheats and free cheats and so on. Each one of them has their own communities within the community".

As such, specific brands often have dedicated public discussion channels where users can openly discuss their products. In contrast, platforms for private tools keep their information, including the discussion forum, exclusively available to registered members. During the interview, participants (n=7) chose not to disclose all of the private tool platforms they engaged with. While private tool platforms require an invitation code upon registration, U4 claimed that "most cheats are not invite-only because they want business. They want money, you know", suggesting why most vendors might prefer to openly publicise their products and extend their outreach. Unlike the public platforms which are easily accessible, private ones are more thoroughly screened and moderated according to U3: "private communities are a lot more strict. thats what ive seen, sometimes they ban you if you dont buy their cheat in a certain amount of time after you registered (like a day)".

Promoting technical collaborations

Open source collaboration plays a significant role among teams of developers. Participants claimed that they had either referenced (n=16) or contributed (n=5) to an open-source project on Github, which stood out as one of the top choices for developers when collaborating and managing version control for their projects. U37 comments "it does [come in handy], but only for some. [...] it's only for like compiling code and for getting code from other cheats". Aside from hosting source code, it offers a variety of features to aid collaboration, such as wiki and access control tools. These features allow projects on cheat development to be "effectively" and "consistently maintained" by the developers (U5). U5 claimed that "the [developers] are much, much more friendly [and] a lot more on github. [There are] a lot of interconnected and well maintained projects" for cheats. While GitHub does not have an embedded chat function and therefore must be used alongside external applications for real-time communication, users can still interact by commenting on source code or reaching out to developers directly through publicly available contact information. In reviewing the platforms used within

the community, U10 claimed that the "[least] interactive one is github, where it's all about coding and not really much else".

5.4.3 RQ6: How does involvement in the cheating culture benefit the users?

The findings revealed three attributes that users gain from community participation, which provide instrumental and intrinsic value to their lives.

Building expertise

Participants claim that the community offers a great space to acquire new knowledge. U5 speaks highly of their experience: "I've learned to program entirely from cheating communities. It's kind of amazing in a way. The right parts of these toxic communities can teach me things that I wasn't able to learn on my own. Sure we make cheats, but we also write various libraries that can be used in standard java projects. Some of which are actually very impressive". Similarly, U21 claimed that they learned English through years of engaging with the *CS:GO* cheat community. This indicates that for certain individuals, the real-world benefits they obtain from the community outweigh the negative social aspects of the community.

Furthermore, participant responses showed that the development of their skills can be directly linked to their career progression. U5 explained: "Since I started learning java, I've actually had several possible job offers for cheats and other things". U31 also observed how they can apply their cheat-related skills to the job market: "There are a lot of extremely talented reverse engineers and programmers in the community and I've seen people leverage their experience to get jobs in the games industry and work on anti-cheat solutions themselves. They publish really interesting writeups on how they achieved things and the steps they took to do so". The skills can be applicable as early as when individuals apply to enter universities: "this gave me a ton of experience with writing code, and learning how applications work. i thought this may be beneficial to me as i thought i could write this to my [universities] as 'reverse engineering' " (U35).

U70 also highlighted their experience: "The site has given me a lot. I met tons of now really good friends on it and got a lot of (not illegal) real-life job opportunities because of it. I decided I wanted to actively give back to the site which had helped me grow so immensely". These views indicate how useful the skills and knowledge associated with cheating are in progressing one's career beyond the context of gaming. U29 expressed their enjoyment in challenging the preconceived notions surrounding the activity: "I like to defy the stereotypes, so defying the 'cheaters are unemployed/uneducated basement dwellers' stereotype also feels quite good, because myself and all my cheater friends are either in good universities, or in very good job positions".

Monetary gains

According to the participants, skilled members can make a significant living by developing cheats: "most people wouldn't realize how much you could really make from it. Like I have a family. I have a kid. I have a girlfriend. We own our own place" (U18). U11 also notes: "i have had months where i earned more than the minimum wage in romania and im selling simple cheats". U70 described how their earnings are comparable to other senior software engineers based in the US: "I can easily make upwards of 50k USD a month while working at max a total of 20 hours a week. As with most SaaS style services, all of the development cost is usually before you can make a dime off of your product, but once you do release it's more money than someone like me could touch in any other way [...]. I was 18 making more than my entire family combined". This shows how cheating can incentivise even those unassociated with gaming to participate in the cheating ecosystem.

Enjoyment

Some participants claimed that they "just like [to test] things out" in cheat tools (U18), and some simply enjoy being part of the contributing force (U5). U29 says "I have always been interested in cheating/gaining an advantage everywhere, not just *CS:GO* or video games, so being allowed to do it freely with no consequences really attracts me". U31 emphasised how they have long been interested in "circumventing

security measures", and that learning about anti-cheat software has motivated them to take it further:

> "I love seeing the inner-workings of software and how things work in general, especially the ways that security solutions can be bypassed[...] I have always been interested in circumventing security measures ever since I was a child and learned about hacking the Nintendo Wii to play games for free. As I got older, I noticed companies started to advertise how good their Anti-Cheat software was and that motivated me to try and get around their implementations. I consider the process of bypassing the anti-cheat to be the actual fun part and don't tend to use the actual cheat software for long periods of time. Although I will admit that winning the game with zero effort is a fun novelty at first".

U70 similarly shared how much they enjoy the development and the analysis aspect of cheating: "Anticheats have advanced a lot in recent years and I believe the AC / Cheater industry is about 5 years more advanced than the general infosec community. The cat-and-mouse game has moved from simple memory cheats, to Hypervisor systems and virtualized drivers. It's really just fun to work on if you're interested in reverse engineering and security engineering. You could say I'm in for the challenge and actually talk to many anticheat developers of major companies [...] in a friendly exchange". This demonstrates how the community can attract individuals who are interested not only in cheating itself but also in understanding and analysing cheats: "I personally don't even cheat anymore but I'm active and moderate just because I like the people there" (U6).

Nineteen participants discussed the significance of HvH in their attraction to the community: "It's just plain fun, HvH adds a new depth to the game I didn't know existed before and trolling people with cheats and exploits is always guaranteed to produce a funny reaction from people" (U22).

5.5 Discussion

Our findings show that members of cheating communities can derive meaningful experiences from their participation even if they do not engage in cheating themselves. We began by identifying the various modes of user participation, ranging from

passive observation to active cheat commercialisation—a pattern consistent with findings from previous studies (Nonnecke & Preece 2000; Butler *et al.* 2007; Chau 2010). Through answering RQ4 and RQ5, we determined that many elements serve dual roles as both providers and enablers of cheating-related activities. Users who create or manage cheat-related content serve as key contributors to the community, fostering knowledge growth and enhancing access to relevant resources, while also drawing upon and disseminating the shared expertise of others. This dynamic reflects the concept of prosumerism found in participatory cultures empowered by technology, where individuals actively blur the line between consumer and producer by both creating and engaging with content within collaborative environments (Jenkins *et al.* 2015; Toffler 1980). RQ6 builds on these insights by highlighting the real-world values that community participants embrace, which differ from the traditional motivations for cheating, such as simply seeking faster advancement in games (Kücklich 2008; Consalvo 2007; Paay *et al.* 2018; N. Yee 2006a; Rubin & Camm 2013). Notably, we discovered that enhancing technical skills is a motivating factor for community involvement, aligning with Jenkins' view that participatory culture fosters skill development in real-world contexts (Jenkins 2009).

The primary difference between the participatory culture in gaming and in cheating lies in how the quest for advancement in cheating goes beyond the established rules in games, with players pursuing success by any means necessary. This approach significantly broadens the scope for practices associated with cheating that have been overlooked by external observers. Social networks within cheating communities play a particularly significant role, as the exchange of the most recent and advanced cheats typically takes place within tight-knit groups (as we will further discuss in Chapter 6). This observation ties back to Consalvo's concept of game capital, discussed in Section 4.5.3, and offers further insight into how social engagement benefits participants in cheating in ways that extend beyond gaming itself.

The findings also underscore the role of online platforms in enabling varied interactions and communication modes. The need for a safe space, shielded from

criticism and judgement by non-cheating players and game designers, lends an intriguing aspect to the interactive dynamics of cheating communities. These platforms offer a sense of belonging and facilitate a range of participation modes centred on the shared interest in cheating. They serve as extensions of the gaming experience, allowing users to both create and consume content inspired by their own gameplay or that of others. This concept resonates with previous studies discussing the "virtual third space", enabling an indirect yet unique form of engagement with the game (Hamilton *et al.* 2014). While some platforms may seem to function similarly to those used in general contexts, there is a heightened emphasis on exclusivity within cheating networks. This is reflected in measures that make these platforms difficult to discover and access, often requiring specific invitations to join, primarily driven by the inherent risks associated with game cheating.

In particular, the research sheds light on the variant spatial layers inherent to the multimodal nature of online games, encouraging interactions across game servers and text-based discussion boards. Broadening the concept of the 'magic circle' beyond the distinction between real and virtual realities (Salen & Zimmerman 2003), our findings confirm an outer-game domain where users engage in a unique virtual reality that extends beyond in-game interactions. This outer-game space can be perceived as a connecting medium between the game space and the real world.

In their research on disruptive behaviours in gaming environments, the Fair Play Alliance and the Anti-Defamation League (2020a) differentiate between in-game, meta-game, and the broader 'ecosystem' that extends beyond the direct game itself. They stress the importance of considering these peripheral spaces when contemplating interventions to mitigate harmful experiences. Our study highlights practices within these outer-game elements, demonstrating the importance of incorporating these commonly overlooked domains when identifying potential targets for intervention.

5.5.1 The dilemmas and liabilities of acting as middlemen

There are significant implications for individuals who engage in communal activities that negatively impact others. In Figure 5.2, we identified three modes of engagement that fall within the segment characterised as both illegal and serious: distributing (f), developing (g), and selling (h) software. Roles such as entrepreneurs and cheat developers make significant contributions to the community by providing actionable resources to multiple users who may lack the technical knowledge or time to create them independently. While their assistance and willingness are highly regarded within the community, their work potentially poses a threat to those outside the community who seek to combat cheating (Cox 2022; U.S. District Court 2021; U.S. District Court 2017). Similarly, from a contribution standpoint, pasters also play a role in populating the community with content, regardless of their actual quality. Despite the disapproval among established community members, their actions involve the distribution of specific types of content, which can exert considerable influence on novice or inexperienced users.

The development and distribution of potentially disruptive source code raise important questions about how certain stakeholders may be affected, even if they are not directly involved in playing the games. Cheat development shares notable theoretical similarities with malware development, as both involve actors who may write scripts for exploratory or educational purposes without explicit harmful intent (Section 8.3.2). Yet, such scripts remain susceptible to exploitation for malicious purposes. Establishing boundaries of accountability in malware development is crucial, as it brings attention to the moral dilemma that often lacks clarity for many casual users. These individuals may not fully understand the potential legal consequences associated with their actions. While the act of development itself may not be a criminal offence in most countries, the unauthorised deployment of such malware is prohibited by numerous jurisdictions worldwide (Macdonald & Frank 2017). In the United States, the ability to create malware can be argued as a form of free speech and personal freedom but complexities arise when considering the context (O. Kerr 2017). A similar argument can be made for cheat development,

as the creators of cheating tools may not deem themselves directly responsible for the harm caused at deployment within game servers. They may argue that developers have the freedom to experiment with code, and should not be held responsible for how players choose to use their tools for cheating. However, legal actions taken by game publishers have demonstrated that such freedoms come at the expense of others, highlighting the need for clearer guidelines and greater responsibility within the broader gaming industry (U.S. District Court 2021; U.S. District Court 2017; U.S. District Court 2016; U.S. District Court 2022). This includes more thoughtful consideration of activities related to cheating even when they occur outside the immediate gaming environment.

5.5.2 Comparing cheating and cybercriminal ecosystems

Given their reliance on similar techniques, there is considerable overlap between cybercriminal ecosystems and gaming cheating communities. Law enforcement agencies have increasingly associated these two domains in recent years but a more nuanced analysis of their actual intersection is necessary to determine which areas require greater attention (NCCU 2017). This section provides a comparative analysis to highlight the shared characteristics and distinctive features of these two communities. It is important to note that these observations are intended purely as analytical parallels and do not reflect any value judgements. Analyses of other similar shadow or underground communities are mentioned in Section 4.5.2 and 6.5.1

Roles and practices

Firstly, entrepreneurs engaged in cybercrime orchestrate operations in ways that closely mirror practices within cheating communities, effectively leveraging their skills and labour. Their efforts not only drive their success but also simultaneously pose societal risks by creating opportunities and resources for those inclined to exploit them (Böhme *et al.* 2021). Similar to their counterparts in cybercrime, entrepreneurs within cheating communities are driven by financial incentives and

demonstrate managerial abilities, such as overseeing human resources and coordinating communications. This shift highlights how cheating has now evolved into a sophisticated enterprise, from the days when cheats were simply acquired from the tips and tricks sections of gaming magazines (Consalvo 2007). The reliance on money mules, common in cybercriminal markets (Lusthaus 2018), was not explicitly observed in our study of cheating communities, except for one instance that may have suggested the involvement of a similar practice (i.e., Section 5.4.1, mode H).

Developers occupy a key position within both cheating and cybercriminal ecosystems, facilitating the production and dissemination of content that moves through networks of buyers, sellers, and end users. There are notable similarities in the factors that attract and retain individuals in these fields, as developers often contribute their expertise in exchange for monetary rewards or social recognition (Lusthaus 2018). Malware developers, in particular, are subject to heightened scrutiny due to the far-reaching consequences their work can have (Macdonald & Frank 2017; O. Kerr 2017; Kaspersky 2021). Although cheats may not proliferate as broadly as general-purpose malware, it can be argued that developers of sophisticated cheats similarly threaten the integrity of the gaming ecosystem by catering to the demand for cheating, thereby impacting both vulnerable players and gaming companies. In contrast, infrastructure providers within these networks may not require the same degree of technical proficiency (Collier, Clayton, *et al.* 2021); instead, they leverage their social networks to facilitate labour in a cost-effective manner. Examples of cases in which gaming servers were funded through credit card fraud to reduce operational costs highlight how underlying servers can be indirectly linked to cybercrime, even when the infrastructure providers are not directly engaged in illegal activities.

Hackers operate in both gaming and non-gaming contexts. For many gamers, identifying and exploiting vulnerabilities is perceived as an intellectual challenge, particularly among those who have already mastered conventional gameplay and seek novel forms of engagement. However, our findings indicate that within cheating communities, individuals who exploit widely available cheats (e.g., crackers) are

sometimes viewed unfavourably, echoing the negative perceptions of malicious actors in broader online contexts. This distinction sheds light on a subtle complexity within cheating, differentiating between those who engage in cheating as a means of exploration and skills development, and those who leverage existing cheats without actively contributing to the community, as perceived by certain members.

On the other hand, content creators who focus on cybercrime are far less visible on social media compared to those who produce content about game cheating. The difference likely arises from the fact that cybercrime is widely prohibited, and content related to it can be promptly removed from highly visible platforms such as YouTube. In contrast, discussions of cheating are often embedded within gaming-specific language and subcultural references, obscuring the true nature of these activities. While members of the gaming community may easily interpret these nuances, they often go unnoticed by those outside the gaming environment.

Pasters and script kiddies are characterised by their limited comprehension of the malicious scripts they employ, yet both play a significant role in facilitating the dissemination of these scripts across online platforms (Lusthaus 2018; Collier & Clayton 2022). Similarly, novice players seeking shortcuts in gaming often fall into this category by adopting off-the-shelf cheats without delving into their mechanisms (Consalvo 2007). These individuals are primarily motivated by the desire to gain an unfair advantage, often remaining unaware of, or disconnected from, the developers who created those cheats.

The phenomenon of lurking within cybercrime communities remains relatively underexplored, making it difficult to assess its full implications. Nevertheless, the absence of active content on public social media suggests that lurkers have a less pronounced impact in these spaces than in cheating communities. In the context of game cheating, our findings reveal that individuals who share materials are often driven by the desire for attention, as measured by views or likes on social media platforms. This pursuit of recognition and validation fundamentally shapes the dynamics of cheating communities, in contrast to cybercriminal communities,

highlighting how public acknowledgement serves as a key driver in the dissemination of cheat-related content.

Platforms

Our findings indicate that the cheating community is generally more inclined towards public sharing and casual interaction, in contrast to the explicitly task-oriented nature of cybercriminal forums (Collier, Clayton, *et al.* 2021). Within these cheating communities, there is also a distinctive prevalence of toxic behaviours and instances of direct intimidation, which is less common in cybercriminal communities. This discrepancy may stem from the youthful demographic of cheating communities, with participation frequently centred on entertainment, whereas cybercrime forums tend to attract individuals with more specific, goal-oriented motives such as financial gain. The presence of toxicity aligns with broader observations of gaming culture, where such behaviours have been extensively documented (Ma *et al.* 2022; Beres *et al.* 2021; Kwak *et al.* 2015).

Furthermore, cheating forums are generally easier to search and navigate publicly, offering more reliable links and resources compared to their cybercriminal counterparts. This distinction likely arises from the intensified crackdowns on cybercrime in the past decade, including large-scale takedowns and the strategic deployment of honeypots by law enforcement (Brewer *et al.* 2019). Such actions have led these communities to exercise greater caution in the operation of their websites. In contrast, efforts by game publishers to combat cheating have not been widely extended to monitoring third-party platforms, which has allowed cheating communities to operate more openly and sustain their presence for longer periods. This is evidenced by a renowned cheating forum such as Unknowncheats, which has allegedly been active for over 20 years as of the time of writing.

5.6 Conclusion

As the second part of the central research question, this chapter explored the practices and platform affordances that facilitate game cheating. By analysing the

modes of participation, the role of social platforms, and the benefits of participation, we have gained insights into how these interconnected elements collectively enhance one's capacity to cheat beyond what would be possible in isolation. The next chapter considers how these practices are governed to maintain a functional community.

6

Governance in Cheating Communities

Contents

6.1 Introduction

The administrative aspects of the cheating community are key to making sense of how cheating practices are supported and sustained, as they reveal the intrasocial structures and processes that enable ongoing participation. Although a range of relevant practices and stakeholders has been identified, the ways in which these elements are interconnected remain largely unclear. Key questions remain that continue to guide research efforts in the field, including: How do such communities establish reliable structures, and who is responsible for managing them? Why do users place their trust in individuals who are known to break the rules in other contexts? Understanding these dynamics is particularly relevant given the intersection of social and gaming platforms, offering a lens to explore the community mechanisms that amplify one's capacity to cheat.

One of the ways to navigate this communal aspect of cheating is through the theory of governance, which provides a valuable framework for understanding how organising structures manage users and resources to achieve collective goals (Ostrom 1990; Ostrom 2000). This theory has proven useful in both offline and online settings, offering insights into collective decision-making, resource allocation, and conflict resolution. A key advantage of this framework is that it offers a comprehensive view of the organising structures and processes, including the distribution of power and the mechanisms by which decisions are made. The systematic approach also provides a perspective that can be applied across various contexts, which is particularly useful for communities that have received limited attention or are challenging to access.

A number of academic studies on gaming have already incorporated the governance perspective to capture the dynamics of rules, norms, and power structures in general gaming communities (Ma *et al.* 2022; Kou, Gui, *et al.* 2017; Massanari 2017). However, there is still limited attention given to cheating as a distinct context. With insights into the various practices associated with cheating, Chapter 5 and prior observations (Pontiroli 2019; Maiberg 2014; Fields & Kafai 2010) together

provide a rationale for investigating the overarching community mechanisms that govern these practices.

To address the final component of our main research question ("*How are game cheating communities established, reinforced, and* ***governed****?*"), this chapter examines the organisational mechanisms that facilitate effective management of community practices and resources. Our research design draws on governance frameworks commonly linked to organisational success, and aligns with recurring themes identified in the broader literature (Ostrom 1990; Etzioni 1961; Dixit 2011). Based on the literature review, we identified four key areas to focus on—shared resources, power structure, member induction, and peer formation—which served as a guide for our data collection and analysis (Pope *et al.* 2000). The sub-research questions are organised as follows:

7. What does the community govern?
8. How is power exercised in a cheating community?
9. What elements facilitate the development of peer relationships and the integration of newcomers within a cheating community?

RQ7 aims to determine the shared resource of interest that serves as a common ground among community members. RQ8 aims to understand the power dynamics within the cheating community, spanning both the application of authority and rules enforcement. RQ9 investigates how individuals interact with one another to gain insights into the social dynamics, and delves into the processes through which individuals come to be recognised as members of the community.

The following sections present a literature review of governance theory and outline the methodologies employed in conducting the study. Overall, our findings detail the practices and dynamics that closely resemble those documented in other communities within the existing literature, including the degree of moderator involvement, the enforcement of rules, and the nature of social interactions. However, given the widespread toxic behaviours present within this community, we observe that members predominantly adopt gatekeeping behaviours as a form of self-protection. Moreover, we highlight the capacity of the community to autonomously

resolve issues without external intervention, even in the face of challenges posed by the risks of cheating.

6.2 Governance

The governance framework offers a lens through which the operation of online communities can be understood (Ostrom 1990; Kooiman 2003; Etzioni 1961; Dixit 2011; Melucci 1996). The framework allows researchers to investigate unexplored or complex topics using a set of guiding principles. Drawing on years of investigation into how real-world collectives manage natural resource systems, Ostrom (1990; 2000) identified key conditions necessary to sustain these resources and to avoid a situation in which individual self-interest leads to societal dysfunction. The insights gained from offline collaboration focus on teamwork dynamics, which can be more challenging to foster in online environments where physical cues are absent. Ostrom's work has been widely applied to online counterparts within CSCW scholarship, particularly in areas such as conflict resolution and prevention of free-riding (Forte *et al.* 2009; Kollock & Smith 1996; Kou, Gui, *et al.* 2017). Her approach to community governance aligns well with our research focus, as its comprehensive scope and proven applicability across diverse contexts offer valuable insights. This perspective can deepen our understanding of how game cheating, given its inherently risky nature, is managed through collective action.

Ostrom (1990) offered eight design principles that encapsulate the essence of effective community governance. These principles bridge the gap between the behaviour of traditional offline groups with that of online communities, and remain relevant today:

- Clearly defined boundaries: The group and the limits of the shared resource are explicitly established.
- Proportional equivalence between benefits and costs: There should be a fair system in place where the rewards received by the members reflect their contributions.

- Collective-choice arrangements: Members should have the autonomy to set some rules and make decisions collectively, fostering commitment to group objectives.
- Monitoring: Regular monitoring must take place to prevent free-riding and resource exploitation, enabling members to identify and address any violations efficiently.
- Graduated sanctions: Minor transgressions can be addressed with simple reminders or social cues, while more serious violations are met with stricter punishments.
- Conflict resolution mechanisms: Conflicts within the group must be resolved swiftly and fairly to maintain harmony and trust.
- Recognition of rights to organise: The group must have the freedom to manage its own affairs without external interference.
- Coordination: For groups embedded within broader social structures, there must be effective means of communication and coordination to enable governance at the most immediate level.

To tailor the principles to the specific context of cheating communities, we reorganise the eight principles into four broader themes that more closely reflect the distinct characteristics of online collaborative platforms: 1) shared resource, 2) authority, 3) rules and sanctions, and 4) communication and interaction. Under the theme of *shared resource*, we draw on Ostrom's principle of 'proportional equivalence between benefits and costs', emphasising access to desired resources as a form of reward and clarifying the nature of the shared resource itself. The principles of 'monitoring' and 'conflict resolution mechanisms' are classified under *authority*, as they reflect the formal oversight present on online platforms to ensure that appropriate measures are implemented. *Rules enforcement* encompass 'clear boundaries', 'graduated sanctions', and 'collective-choice arrangements', which together establish the foundation of community regulations. Finally, we interpret 'coordination' as *communication and interaction*, recognising that effective coordination is predicated on users' capacity to communicate and interact fluidly. This theme also considers whether the environment fosters collaboration and

coordination, particularly regarding access to social networks and facilities associated with game cheating.

Based on these four themes that categorise Ostrom's principles, we examine the literature relating to each aspect and its application within online communities.

6.2.1 Shared resources

The foundation of any robust governance system is shaped by the challenges encountered in overseeing access to communal resources (Butler 2001). Previous studies on governance have explored a wide range of offline (Ostrom *et al.* 1994; Henderson 1995; Levitt & Venkatesh 2000) and online domains, including knowledge base, eSports, and cybercrime (Choi & Tausczik 2018; Beschastnikh *et al.* 2008; Ma *et al.* 2022; Dupont & Lusthaus 2022). In the context of cheating, the activity is often perceived as lacking the foundational elements of shared experience, as it is inherently self-serving and exploits the expectations of others, making it appear incompatible with the concept of collective engagement. However, research so far has revealed that cheating communities are not merely loose assemblies of isolated individuals but rather complex social networks, where users can form peer groups centred on their shared interest in cheating. Within these groups, participants exchange detailed information, strategies, and resources, even though outsiders continue to view the activity as controversial.

The distinctive aspect of cheating lies in its inherent risks, given that game publishers and developers invest significant effort in anti-cheating measures to eradicate such behaviours (U.S. District Court 2021). Public disapproval and stigma surrounding cheating further complicate matters, making it difficult for newcomers to access reliable, up-to-date information in mainstream online spaces. Therefore, by identifying the specific manner in which the community is governed, we gain insight into its core resource interests, as well as the collaborative efforts necessary to address needs that cannot be met individually.

6.2.2 Authority

Authority figures play a crucial role in maintaining order within a community. Although online communities were initially conceived as open and democratic spaces, they have evolved to place greater power in the hands of a select few individuals with the expertise and resources to manage these spaces (Schneider 2022). Today, online communities commonly adopt a bottom-up approach to governance, incorporating mechanisms from offline contexts, such as appointing volunteer moderators with limited yet significant permissions to influence content visibility (Seering 2020).

Appointed leaders, who have been lower participants themselves at one point, are considered better able to empathise with members and translate shared needs into action (Ostrom 1990). Scholars have investigated the ways authority figures guide decision-making, enforce community standards, and handle conflicts, including tasks such as content moderation and addressing anti-social behaviour (Kooiman & Vliet 2000; Kooiman 1993). These leaders also play an important role in organising large-scale collective actions, at times influencing platform operators to respond to community concerns (Massanari 2017; Matias 2016). In Reddit, researchers have observed that most moderators are motivated by shared values and goals (Matias 2019), despite the absence of monetary rewards. One study (G. Hsieh *et al.* 2013) found that personal identification with the community, prosocial orientations, and general reciprocity are factors that predict voluntary assistance towards newcomers on Reddit. Recognition for such contributions can also take the form of a visual badge of prestige displayed on user profiles (Cavusoglu *et al.* 2015). Thus, by investigating the influence of authority figures, we gain insight into community values and the ways in which behaviours are shaped to serve collective interests.

6.2.3 Rules enforcement

Rules serve as guiding principles that regulate behaviour and ensure order within a community or organisation. They provide a framework for decision-making, help outline boundaries, and promote cooperation and coordination among members (Ostrom 1990). In online communities, active rule formation and enforcement

reinforce the values and behaviours of members, with rules applied according to the specific context of each platform. In collaborative platforms such as Wikipedia (Kittur & R. E. Kraut 2008), rules play a vital role in resolving potential coordination errors, thereby ensuring consistency in content quality.

On Reddit, millions of topic-specific communities known as subreddits adhere to rules set by community moderators or the platform itself. More popular and active subreddits often have more structured rule systems than those with less activity (Fiesler, Jiang, *et al.* 2018). Rules can also streamline low-cost dispute settlement methods that minimise costs and damages to the community (Ostrom 1990; Weller & Wolff 2005; Ghai 2000). Their effectiveness is reinforced by clearly defined boundaries, which not only clarify members' rights and privileges regarding shared resources but also minimise ambiguity when disputes arise. Sanctions further support this framework by encouraging adherence to community standards and deterring violations, thereby maintaining order and trust within the group (Moser *et al.* 2017). Authority figures and rules enforcement are interconnected elements within a power structure, as rules require active enforcement by individuals or systems managed by individuals to be effective.

6.2.4 Communication and interaction

Effective interaction is fundamental to cultivating a sense of belonging and strengthening members' commitment and coordination within a community (Etzioni 1961). By fostering social connections, community members develop a shared understanding of acceptable behaviour, negotiating expectations and norms around their common interests (Weld *et al.* 2022; Centivany 2016). In the absence of formal authority, such communities often rely on informal mechanisms—including peer monitoring and self-regulation—to facilitate information exchange and enrich the collective knowledge base (Beschastnikh *et al.* 2008).

This emphasis on building social bonds naturally extends to how community members engage with both content and one another online. Within social platforms, discussions that reflect shared values are often regarded more highly than

content that is simply uploaded, as the former more meaningfully demonstrates the community's collective priorities (Centivany 2016; Steinmacher *et al.* 2015). Similarly, features such as Twitter hashtags are used by users to express identities and support group ideologies, fostering trust through the development of a shared identity (Stewart *et al.* 2017; Moser *et al.* 2017).

While reinforcing shared values within a community strengthens internal commitment, this process can paradoxically alienate external observers by fostering perceptions of insularity. Such tensions arise when tightly knit norms conflict with broader societal expectations or when in-group solidarity inadvertently signals resistance to external perspectives (Yeshua-Katz 2015). This duality underscores the intricate dynamics inherent within the polarising contexts typical of such communities.

The delicate balance between internal cohesion and external perception becomes even more critical as communities evolve. Newcomer integration is important for community growth and sustainability (Arguello *et al.* 2006). Successfully integrating newcomers not only revitalises the community but also ensures the continuity and progression of a dynamic social environment. However, despite these clear benefits, newcomers may face barriers within the established social structure, which can result in disinterest or eventual withdrawal from the community (Steinmacher *et al.* 2015; Halfaker *et al.* 2013; Graham 2019). As such, the induction process, as the initial phase of group interaction, offers valuable insights into the collective values that sustain the community over time.

6.2.5 Summary

Exploring the governance aspects of cheating communities provides an opportunity to understand how established practices and behaviours are continually reinforced. Ostrom's principles for commons management provide a systematic framework for exploring the fundamental characteristics of an active community, which is particularly useful when the community in question is little known or difficult to access. We therefore adopt this approach to identify the social mechanisms that govern users, practices, and resources that play a notable role in facilitating cheating.

6.3 Methodology

The governance framework served as the primary theoretical lens for this abductive investigation (Section 3.2.2). The following uses the same data from 43 participants as Section 5.3 to analyse the foundations of governance in game cheating communities. Initial data collection (n=26) focused exclusively on *CS:GO* players, while the second phase (n=17) expanded to include individuals familiar with cheating-associated activities across multiple gaming platforms. The outline of the overall data collection is summarised in Section 3.3.5.

6.3.1 Data collection

For the first phase of the data collection, our interviews were designed to enquire about the foundations of governance in game cheating communities. Using the abductive approach allowed us to formulate the interview questions and systematically examine the data in light of pre-existing concepts of governance. The interview questions were formed around the common set of principles from the governance framework as outlined in the literature review: authority figures, rules enforcement, newcomer induction, and peer formation. The question of 'what' is being governed (RQ7) emerged after several iterations of the analysis, as it became evident that we lacked clarity on the subject matter. The following outline of questions was used to shape the interview narrative:

- When and how did you join this cheating community?
- What kind of channels, servers, and websites have you used in relation to cheating?
- Have you formed friendships or business partnerships with others through any of these platforms?
- Could you provide an example of how you developed an online bond with someone within the community?
- Have you ever assumed any specific roles within the community? If so, how did you attain these roles, and what responsibilities did they entail?

- Have you familiarised yourself with the rules outlined in the channels? What guiding principles were employed in establishing these rules?
- How do you establish trust with others in this community? Conversely, in what ways do you find it difficult to trust others?
- Have you personally experienced being banned from the community, or have you witnessed any of your friends facing such consequences?

The phrasing of the questions varied according to the participant's level of personal or professional experience. The second phase of the data collection, geared towards the participatory aspects of the community (Chapter 5), was added to the overall dataset following the iterative analysis process.

6.3.2 Data analysis

Based on the governance framework, our analysis identified key themes predetermined by its theoretical constructs while accommodating emergent patterns. The abductive approach enabled the data to align with both existing theory and empirical observations. Interview transcripts were initially examined in depth to identify key concepts within the predetermined themes (Pope *et al.* 2000). Guided by a priori objectives—specifically the investigation of community governance—we systematically indexed the data, accommodating both predefined and emergent codes identified in subsequent coding stages. The data was then annotated using these codes, with following iterations refining its arrangement in line with the framework. This process resulted in a visual mapping of the principal concepts within the established themes, validated through discussion with two supervisors experienced in qualitative research. Table 6.1 presents a snapshot of the coding process.

A total of 40 emergent codes were identified, and subsequently categorised under the pre-established global themes to structure the findings. The results of this analysis are displayed in Figure 6.1. Within each category, the codes are arranged in descending order of frequency, with the most common code at the top. The codes highlighted in yellow on the side emerged during the initial phase of the analysis, prior to exploring it further (in Chapter 5).

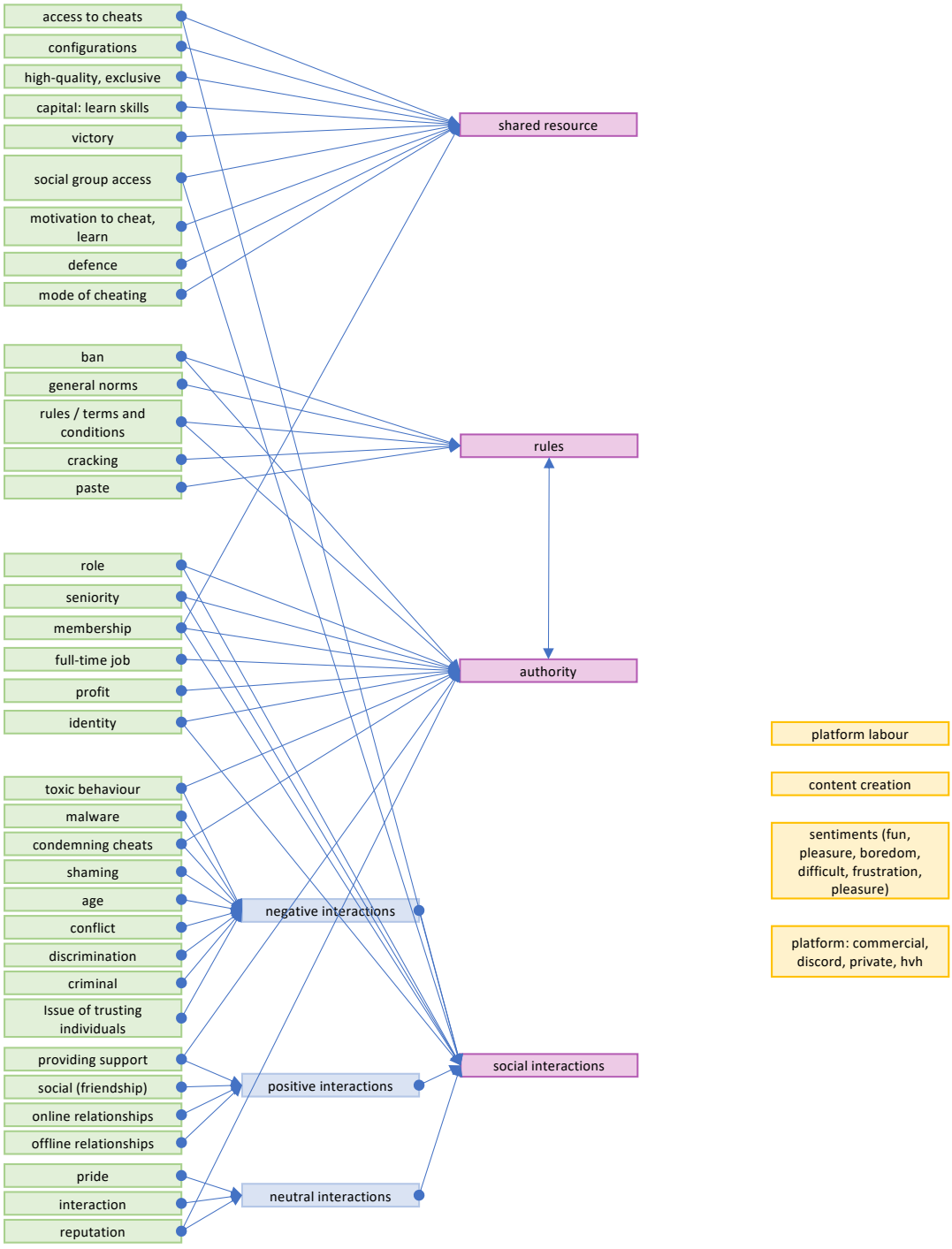

Figure 6.1: Codes and themes from analysis with the governance framework.

Quotes	Emergent codes	Global themes
"To get access to moderation in these forums is very difficult, I would say almost unrealistic if you are not friends with the creator or you are not a [cheat] programmer."	Access, Membership, Social (entry to the group), Social (friendship), Role	Social interaction
"the owner has never come out and directly said it and instead they've taken to the Internet to make the person who exposed them look bad for [...] 'why did you expose my hard work?', 'I took time to make a forum in a discord over that' [...] it has actually blown back up [in] my face [and] in other people's face at some points for exposing [the] paste"	Paste, Cracking, Social (reputation), Role, Condemning cheats, Shaming	Authority

Table 6.1: An illustration of theme-searching in the data.

6.4 Findings

The findings are divided into three domains that respond to the research questions: 1) community resource, 2) exercising power, and 3) newcomer induction and formation of peer relations.

6.4.1 RQ7: What does the community govern?

According to the participants, scripts and ready-made programs are the core resources of interest to the community. The tools are sometimes simply referred to as 'cheats', often consisting of special features and options (e.g., aimbot, triggerbot, wallhack) that can be adjusted and customised for their fit. Cheats can be made for private sale (i.e., use by invite only), public sale, or offered for free. The participant responses revealed three of the most significant properties of scripts and programmes, which are broadly referred to as tools in this text:

- Undetected: Because modern anti-cheat systems can easily detect amateur cheat scripts, cheating players value cheats that appear of higher quality and are written by reliable users. Such users often demonstrate a deep understanding of the game architecture and reverse engineering. Even then, no amount of complexity can make it timelessly invincible against detection. Therefore, participants weighed heavily on whether a cheat had been detected at the time of the purchase or adoption. U17 claimed that some of the best cheats they have used are "still undetected". Unlike some who would prefer to use them in a secondary account made for cheating, U36 added that they use cheating tools on their main game accounts "because it's private and it's been undetected for like six years now".
- Effective: Perhaps the most intuitive, yet easily overlooked, quality is the actual effectiveness of the tool in assisting a cheater to advance within a game. U12 claims that a 'good' cheat is something that is "not clearly pasted, [has] good rage cheating and legit cheating features, [and has an] okay price". Because cheats are marketed as commercial products, some participants (n=11) perceived that those offered at higher prices are likely to be more effective. According to U17, who also has experience in other shooter games such as *PUBG*, this view is not unique to cheating in *CS:GO*: "[the] community [of *PUBG* cheating] is very small because cheats for that game are very expensive. But I think the most [...] well-known cheats [are] $50.00 for a week which is extremely expensive [...] but that's just because *PUBG* actually has a pretty decent anti-cheat that's hard to bypass unless you know what you're doing. so people that make cheats for that game are gonna sell them at high prices because I know that it's very difficult to bypass it".
- Exclusive: Participants revealed that they place more trust in information which are not as easily accessible by the public. Because it is accessible only to a limited group of vetted users, the cheat software is less likely to be detected by anti-cheat systems than it would be if made publicly available. U1 describes a private cheat tool which is notoriously hard to get their hands on: "Having

> [cheat name] is essentially the biggest 'flex' in *CS:GO* cheating". Although exclusivity does not guarantee complete evasion of anti-cheat systems, the information remains valuable to members precisely because it is scarce.

Cheat scripts and tools are often found with up-to-date information on the general landscape and tips on evading detection successfully. For example, this can include the news on the latest patching by game developers which makes previous versions of cheat tools less valuable. This information is typically disseminated through forum posts or shared directly among individuals within specific chat channels. Some participants also said they share and stream videos to communicate such news (n=7).

Newcomers who have yet to develop technical skills, as well as users who are unwilling to create their own cheats, whom some participants (n=13) believe make up the vast majority, tend to download cheat tools or scripts uploaded by others. Some resort to "pasting", or plagiarising the scripts created by someone else, which U17 claims is "a huge no-no [in] the community". Pasted resources are also regarded as being of lower quality because of a perceived lack of originality and knowledge of the content uploader.

There are other forms of social assets which the participants did not directly recognise as tangible resources but as enablers of access to resources. The social network of peers and collaborators is an important part of being recognised and advancing in the community regarding access to the latest cheat tools and servers. Nineteen participants agreed on the importance of being recognised by others in the community in order to be invited into a more prominent circle of cheat sharing. U18 claimed that "finding out about new cheats [and] websites is tough [for] other people... [so] you become friends with other cheater[s] and they tell you what they use and you would find out that way".

6.4.2 RQ8: How is power exercised in a cheating community?

The power structure in the cheating community is predominantly manifested in the form of 1) members with authority over the community and 2) rules. Although

its capacity is largely limited by the platform administrators who overshadow the communities (Gillespie 2018), a certain mode of hierarchy is useful in assembling users together, guiding them to appropriate points of contact, and assuring the legitimacy of the values upheld by the community.

Authority figures

Findings showed that moderators and administrators in the cheating community exercise authority over content and membership through the enforcement of rules and norms, in line with previous literature on online communities. In *r/csgohacks*, moderators can ban content or users deemed unfitting, or announce contents which garners the most attention from the community. They also help the members navigate the community, and answer questions from novice users. Participants with experience as moderators expressed a strong passion for supporting the act of cheating, as demonstrated by their own engagement with cheats or promotion of related content. U3 explained that they had accumulated so much knowledge about cheating in other games that they found themselves assisting others even before considering becoming a moderator: "I would start answering questions in support channels when I was a member and then I'd apply for a staff position. I would keep the servers running well and ban the people who would put malicious content or try to scam". Participants with moderator experience in public social platforms claimed they have actively engaged in other social platforms and collaborative projects to attract more members to their forums and channels.

Becoming a moderator. As to how one becomes a moderator largely depends on the existing social network. On Reddit and other public social platforms, such as Discord and YouTube, any community member may assume the role of moderator by establishing their own space (e.g., subreddits, Discord channels, Youtube channels). In established groups such as *r/csgohacks*, individuals are typically invited by existing moderators on the basis of personal acquaintance or demonstrated moderating experience specifically related to cheating. U5 describes, "I became a mod specifically because I was friends with the owners. It isn't really

administrative at all. moderators are moderators because we're friends and can trust each other to help maintain the quality of the server". Participants emphasised the importance of social rapport that underlies the decisions in choosing moderator roles. U10 claimed that collaboration among moderators is similar to that within any other context beyond cheating: "It's like co-workers. You have your favorites, and you have the ones you hate. But there is a difference between those two, that we were more a friends group doing this thing that connects us, and played together".

Participants with relevant experience (n=7) shared that moderator selection becomes more complex in product-oriented areas of the community, such as discussion forums dedicated to a specific cheat, particularly when access is restricted to private channels. U24 claimed: "To get access to moderation in these forums is very difficult, I would say almost unrealistic if you are not friends with the creator or you are not a [cheat] programmer. Most users have the role of a member and just buy a cheat". U3 shared how some customised platforms require a screening process before attaining the moderator status: "You fill out a google forum and they ask your age (they dont like people under 14 usually) and they ask you why you want to be that position. Then sometimes they ask you some questions about modding itself and if you get them right you will have a higher chance of getting in or sometimes you just get a helper position because of how active you are". Although moderators wield considerable power over members, the initial administrative process positions the platform as the higher authority overseeing governance within the cheating community, including the selection of moderators.

Alternative routes for gaining authority. Reputation also emerged as a significant factor within the online community. It was reported that users with a favourable reputation were highly respected by most community members, granting them increased credibility in their actions, irrespective of the roles they held. U12 claimed that "lots of people judge others based on how much 'rep' you have which is a count of how many people said you're trustworthy". The 'rep' is typically visualised through public profile statistics visible to other users (U22). For instance, members with longer-standing accounts on the platform are perceived to have

higher reputations and greater standing within the community, making them more likely to be respected by others (U10).

Being well-known within the social network acts as a status symbol, sometimes granting individuals the ability to override the negative perception of unethical or criminal behaviours. U17 shared an episode in which a group of users attempted to expose a plagiarised cheat ("pasted") sourced from an existing one but were met with unexpected backlash and negativity directed towards them instead of the user ("owner") behind for the plagiarism: "it has actually blown back up [in] my face [and] in other people's face at some points for exposing [the] paste, because the owner is usually a well known member of the community and is known for this sort of thing". Some have witnessed this phenomenon in more serious social contexts as well. U20 recalled a story of a well-known member who was "sending inappropriate images to a 15 year old" but managed to evade criticism for a while: "it still amazes me but i think the reason he has friends is because he is somewhat high up in the community before all of this came out". This highlights that users, regardless of their official role within the platform, can wield significant power and influence in shaping the existing norms within the community.

Rules enforcement

There are two types of rules that participants consider on online platforms such as Reddit: 1) the terms and conditions set out by the platform itself, and 2) the rules set out by the community moderators. Participants (n=12) claimed that they often skim through or even skip reading the terms and conditions of the platforms. As U8 puts it: "who reads them?" During the interviews, the majority of perspectives on this topic revolved around the rules established by the moderators, especially the ones which are most relevant to toxic behaviours: "Do not be toxic, do not send [not safe for work] stuff such as porn or gore" (U27). U27, who has experience in moderating, adds that the most important aspect of rule-making is "mak[ing] their rule easy to understand and not convoluted". Despite the general lack of interest

for thoroughly reading through the rules, U17 claimed that rules can signal whether the administrators genuinely care about the community:

> "If I join a forum... and its rules are: 'don't be toxic', 'don't drop the hard r', you know, 'don't post safe for work content (NSFW)' and 'be kind to each other' [...]. That to me speaks that you know the stuff and the owner [...] is intelligent and trustworthy in their community. They are quick to ban or take action against people that deserve it and they will not really tolerate [...] people [who] break the rules"

This perspective suggests that the actions of those who impose the rules can significantly impact the perceived legitimacy of the community among its members.

On the other hand, norms within the community are more challenging to define as they are highly subjective: "Etiquette varies on how much of a douche you are. I consider no doxxing[1] to be my rule" (U12). While some moderators may be much more strict towards toxic behaviours ("zero tolerance towards shit posting" (U17)), some may allow it if it has an element of humour (U5). Participants shared experiences of being banned or witnessing bans across both public and private servers for opposing the prevailing norms. The reasons for banning users included receiving too many warnings (U8), getting on bad terms with the moderators (U20), escalating toxicity into a fight (U5), trying to sell an account (U5, U18), sharing an account (U5, U16), exposing malicious software in cheat tools (U16, U17), and sending illegal contents to the moderators (U15). The punishment is not limited to a mere ban and may also embody other means: "I've seen people get doxxed for asking a question about a cheat" (U12), for instance. These experiences highlight the complexity of delineating norms, as they are highly context-dependent and influenced by the individuals involved.

[1]Doxxing refers to the act of publicising personally identifiable information about a user, and is a common method of intimidating targeted individuals.

6.4.3 RQ9: What elements facilitate the development of peer relationships and the integration of newcomers within a cheating community?

Modes of bonding

Bonding with members is an important part of integrating into the community. Participants (n=17) reported that they had experienced bonding with others at varying depths of interaction. They described bonding experiences through offering to play games together (n=16), sharing common interests (U5), and even distributing Youtube videos about cheating (U24). Some decide to befriend others if they are simply "pleasant [...] to communicate with" (U24). Some formed friendships through mutual friends (U14), and some even went so far as to meet offline after collaborating on a relevant project (U18).

Besides these, interactions can also occur simultaneously across multiple platforms. While the atmosphere of the community on Reddit is relatively moderate, the responses revealed that the community's spread across platforms generates divergent perceptions on forming relationships, where some platforms are better suited for social networking than others. For instance, Discord was a popular choice among participants to communicate and familiarise with users, whereas *HvH* servers were deemed as one of "the most toxic place in all of *CS:GO*" (U3).

A challenging social environment. Many participants (n=22) claimed that the prevalence of toxic behaviours makes it challenging to naturally develop trust and form meaningful relationships. Participants expressed their awareness of the negative image of the community (n=16), and some mentioned a decline in trust (U8): "There is no trust in this situation. It's always every person you talked to, everything you say to a person, it's all risk" (U4). Newcomers and "no names" (i.e., individuals with no account or with accounts unfamiliar to the community) are particularly more prone to being targeted for toxic behaviours (U21).

Despite these intimidating impressions, some participants commented that the community still has its "uplifting" (U17) moments with "good people" (U16). The conflicting experiences of prosocial and anti-social behaviour recounted by users

highlight the inherent tensions they face in balancing the practical benefits and drawbacks of participating in the community. According to U23, this is what both "scares and excites" them. U6 asserted that the toxic behaviours are "more of a hive thing" and that "one of the nicest people [they have] ever met is active in the cheating community". U10 explains the dichotomy in depth: "My experience with cheat communities is pretty bipolar. It very highly depends on the community that I am in. The cheating community is extremely toxic, and extremely unfriendly [...]. But at the other end, there are normal people [who] are smart in computer engineering and can help you and are friendlier than any other group in the cheating scene". U16 claims that socialising in this community is no different to that in others: "it's like making any other friends online really, you get to know them, you figure out over time what kind of people they are and you grow closer to those you connect well with and like as a human". The simultaneous presence of both toxic and positive elements in the online environment illustrates how users must navigate these complex dynamics to identify suitable individuals for interaction.

Induction into the community

Newcomers' induction into the community requires a combination of navigating logistical hurdles and engaging in social networking. This dynamic can vary across contexts, and it is necessary to distinguish how these processes differ in public and private online settings.

Public. The *CS:GO* cheating community on Reddit enables public access to the discussions involved in cheating. Users discover public websites through peers (n=9) or the use of search engines (n=14), and observe the displayed information to determine whether it is relevant to them. Because the platform is public, there is no formalised process for accessing them or onboarding them in the community. Instead, the users can actively decide whether to continue participating in the community, which may depend on the perceived relevance to their interest (n=11) or the feeling of enjoyment (n=9). Public forums tend to have a much larger user base due to their ease of access, and thus are usually used for casual interactions rather than

familiarising with users at a personal level. Participants indicated that membership within the public sphere of the cheating community is primarily defined in two ways: firstly, through the contribution of valuable content to discussion boards; and secondly, by the sheer act of cheating, which situates individuals within the broader circle of cheating players. By contrast, those who contribute substantially more are acknowledged as particularly relevant members of the community.

Private. The *CS:GO* cheating community extends to private platforms, which have distinct approaches to onboarding new members, and require significant effort to gain access to reputable forums. To join the forums, a user needs to be invited by an existing member, usually using a code, and also meet certain prerequisites (e.g., the new user has not been banned before (n=4), or the inviting user needs to have been part of a platform for a certain period of time (n=3)). Some participants in private forums chose not to disclose the names of the forums during the interviews (n=7). U9 mentioned that the invitation code for a private forum they are a part of was "given out only by the owner" in Discord in the early days, and that "without this invitation code you couldn't create a forum account [nor have] access to any content on the forum". To receive the invites, individuals must have connections with existing members, which can be challenging if they have not previously been a part of such social circles.

6.5 Discussion

A notable aspect of our findings is that, despite its unique nature, the cheating community exhibits similar behaviour and dynamics to other communities previously studied. Initially, we anticipated that individuals within the cheating community would employ distinct strategies to evade detection, expecting a fundamentally different operational approach. However, contrary to our expectations, we observed that the findings align with mechanisms observed in other online communities, including the role of moderators, the enforcement of rules, and the patterns of social interaction (Grimmelmann 2015; Yu *et al.* 2020; Cai & Wohn 2019; Jiang, Middler, *et al.* 2020). For instance, within the cheating community, the moderators

were mapped on a close-knit network of users holding administrative roles upon taking them up, and they also showcased a sense of community and shared identity, contributing to the overall cohesiveness of the community (Kiene *et al.* 2016; Matias 2019). The data did not contain any insights on conflict resolution mechanisms, which may not be as prominent or necessary in this context, as the community primarily revolves around accessing the cheat resources rather than addressing interpersonal conflicts. Further, individuals in positions of authority, such as those with good standing or moderator roles, can exert informal control by openly condemning certain behaviours. This ensures that conflicts are swiftly resolved, as seen in the case of plagiarised cheats.

What distinguishes this community from other online communities is its ongoing need to attract valuable information and maintain a reliable membership, all while remaining vigilant to the risks inherent in cheating, such as the potential for detection by game companies. The distinction between public and private forums, and the notable interest for the latter in our data, also suggest how their resources likely deliver the three characteristics uncovered in RQ7 findings. The stringent screening process for private forums ensures that only individuals vetted or recommended by trusted members can join.

The competitive nature of gaming is a possible way to interpret the community's unusual approach to the risks associated with cheating. As cheating in gaming revolves around violating rules and norms to gain an advantage, these values may also permeate the dynamics of online communities. This is also evident in the example of a user who, despite deserving condemnation, was not criticised due to their standing within the community. The hostility towards novices attempting to get involved in the community suggests a gatekeeping culture that contradicts the principles of community building (Barzilai-Nahon 2008). These behaviours may stem from the general desire among members to minimise the risks of exposure while seeking recognition in their field of interest. It is worth recognising that, considering the normative perception surrounding game cheating, some individuals

may become targets of such negative behaviours without fully understanding the extent of the harm (Cho & Flechais 2022; Devito *et al.* 2019).

6.5.1 Gatekeeping as a form of self-protection

Our investigation into the cheating community sheds light on the social mechanisms that arise from the community's efforts to safeguard its central resource. The findings indicate three main characteristics—undetected, effective, and exclusive—associated with sought-after cheats and scripts, along with the closely linked discussions and social networks that surround them. The technical complexity and the niche focus of these resources often present significant barriers to access to such resources.

As participant responses indicate, cheating proficiently is inherently difficult and requires skills honed through practice over time. Achieving success in cheating often necessitates a minimum level of technical expertise to develop or appropriately utilise cheat software. Even players with only a basic knowledge of non-technical tricks must understand when and how to employ them strategically, accounting for their highly context-dependent nature, to evade detection. Moreover, game corporations invest heavily in deterring cheating on their platforms, and public media often holds a negative view of cheating, posing additional challenges. Pursuing such resources is further complicated by the self-protective mechanisms observed within the community, such as the strictly referral-based induction process (Cui *et al.* 2022).

Under such precarious circumstances, community members strive to maintain a delicate balance: making cheating-related resources accessible to genuine members while protecting them from outsiders in order to preserve their value. Based on our findings, key aspects of this self-protective mechanism include gatekeeping practices against novices and newcomers, and the use of reputation-based trust for deeper, more meaningful interaction. The distinction between public and private forums, coupled with a prevailing preference for the latter, further reflects the need to protect their hard-to-access resources.

In conjunction with their inherent challenges, these self-protective mechanisms create an artificial sense of scarcity, limiting access to those outside the trusted social

circle. Similar mechanisms have been observed in information-centric organisations (Dixit 2011) and stigmatised communities (Jessa Lingel & Boyd 2013), operating under the concept of information poverty. Lingel and Boyd (2013) argue that such communities employ information as a boundary between insiders and outsiders, ensuring their safety and preventing outsiders who lack sufficient trust from accessing valuable information.

6.5.2 Self-governance

In instances where community goals no longer align with the interests of its members, conventional governance models become less effective, leading community members to assume alternative governance and moderation duties based on their specific interests or priorities (Acemoglu & S. Johnson 2005). Our findings surface aspects of self-governance within the cheating community, where members establish their own rules, norms, and operations independently of game publishers and mainstream communities. Self-governance reflects the community's capacity to address challenges and maintain its collective identity, serving as a mechanism for members to address issues that threaten their well-being, and to articulate dissatisfaction with the existing conditions (Kooiman & Vliet 2000; Rasmussen 2011).

Our findings also reveal that trust, established through close-knit relationships and mutual benefits, is crucial for maintaining user engagement and sustaining the cheating community. These observations align with previous research highlighting the importance of ongoing social interactions in facilitating self-governance and autonomy especially when these are shaped by newly developed community values (Kooiman 1993; Kooiman & Vliet 2000; Melucci 1996). Within the cheating community, members interact with one another much the same way as members of any other community, regardless of their real-life identities. This suggests that, despite the negative public perception of cheating, individuals who engage in such activities are perceived no differently from average gamers within the cheating community.

It is worth noting that the self-governing capacity can also present risks in this context, as it can foster harmful behaviours, toxic ideologies, and exclusionary practices without external oversight (Yeshua-Katz 2015). Some aspects are increasingly being flagged in the gaming industry as serious issues encompassing fraud and malicious software (Activision Blizzard 2021). Addressing these concerns as an outsider requires staying informed about the developments within the community and implementing appropriate measures to promote safer online practices, particularly in light of the popularity of gaming among younger demographics.

6.5.3 Social structures within the community

Our study of game cheating suggests the presence of numerous social structures associated with cheating. Initially, we employed the term 'community' to refer to the loosely defined organisational structure of our study (Harris *et al.* 2019). However, our findings indicate that the community extends across various platforms and its definition varies depending on the subject and context. Moreover, distinct 'groups' can be identified within the larger 'crowds', where exclusive membership is required for access, as exemplified by the invitation-based process for private forums. This subdivision into discrete social units likely stems from a desire to prioritise the exclusivity of the resources, thereby enabling more effective monitoring and protection against external threats.

Following our analysis, we situate the community between the concepts of 'crowds' and 'communities', as classified by Harris et al. (2019). Users within this context can actively contribute and engage in tasks, such as sharing new cheat scripts, while others may prefer to lurk in the background and maintain distance from others (Nonnecke & Preece 2000). However, the lack of clarity regarding the organising structures in practice poses challenges in accurately capturing the underlying mechanisms, thus making it difficult to inform research directions and policy considerations (Harris *et al.* 2019). In Chapter 7, we integrate these structural nuances to present a comprehensive account of cheating as a broader ecosystem.

6.6 Conclusion

This chapter delved into the governance mechanisms of cheating communities to understand how it manages and sustains cheating practices. By applying the theory of governance, we conducted interviews with users from competitive cheating communities, uncovering key aspects of shared resources, authority figures, rules enforcement, and modes of bonding within the communities. While cheating communities share many features with other online groups—such as moderators embedded within close-knit networks and a sense of shared identity—they also display distinctive traits, most notably a gatekeeping culture that has developed to protect high-risk resources from external threats. These findings reveal a complex layering within the community's social structures, emphasising their importance in understanding the cheating phenomenon. The next chapter explores the various social collectives involved in cheating and considers their wider implications.

7

Mapping the Social Structures in Cheating: Opportunities for Intervention

Contents

7.1 Introduction

There is increasing evidence and growing concern regarding the harmful activities associated with cheating and manipulating games, with authorities investigating potential links between these behaviours and broader cybercriminal activities (FPA 2022; NCCU 2017; CREST 2015). A limited understanding of the risks and implications within the cheating ecosystem poses challenges for effective intervention, enabling harmful practices to proliferate unchecked. To better understand the wider context and identify areas for action, it is important to synthesise the underlying concepts and define the areas that warrant intervention.

Our research began with an exploratory inquiry of the community dynamics, considering the nature of interactions, modes of participation, and modes of governance, to establish a baseline for identifying areas meriting further analysis. The empirical investigation so far has uncovered valuable insights into the social practices that transpire outside the boundaries of gaming environments. By having framed our research around the concept of community, grounded in shared interests and skills (Section 1.7), we are now positioned to advance our understanding of this initial scope and delve deeper into the implications of these dynamics.

This chapter lays the foundation for developing intervention strategies against harms observed within game cheating by delineating the social structures and associated behaviours within the cheating ecosystem. By revisiting our raw data through conceptual framework analysis and drawing from literature review, our framework delineates varied social collectives, each distinguished by its primary motivations for engagement, individual practices, and governing practices. Moreover, the framework provides a nuanced understanding of a community of users typically associated with perpetrators of disruptive behaviours, with insights that there are also victims who are either inadvertently subjected to harm or actively involved

in facilitating harm. Following the development of the framework, we conducted expert evaluations to assess its applicability in real-world contexts.

Based on the findings, we identify several areas that warrant intervention to mitigate harmful behaviour. There are three primary areas of concern requiring attention. Firstly, the toxic behaviours observed across the identified collectives foster an environment of victimisation, highlighting the need for educational initiatives, reporting mechanisms, and enhanced cyber security measures to protect potential targets. Secondly, the notable absence of ethical and social norms, where values are predominantly shaped by social status or recognition, calls for proactive initiatives to raise awareness of the associated risks, promote positive role models, and inspire a more prosocial discourse. Lastly, the active involvement of cheat developers warrants closer monitoring and enforcement of legal measures to prevent potential cyber threats within the broader ecosystem. We then reflect on the implications of these activities for relevant industries through the lens of accountability. We advocate for cross-industry collaboration with social media platforms, game providers, non-profit organisations, and law enforcement agencies to address the practices that extend across multiple online spaces beyond gaming. The research presented in this chapter has been published in the ACM Games journal (Cho, Lusthaus, *et al.* 2024).

7.2 Background

To understand where organisational efforts and concerns currently stand, we begin by examining the issues highlighted by relevant organisations in recent years, with particular attention to those extending beyond the confines of gameplay. We then provide an overview of how conceptual framework analysis, increasingly adopted in games research and CSCW, can offer insights into the complexities of gaming communities, especially regarding game cheating and its associated collaborative activities.

7.2.1 Concerns beyond gameplay

Non-profit organisations (NGOs) and game organisations committed to fostering positive gaming environments have emphasised the need to raise awareness of less typical and emerging forms of harm within games. The Fair Play Alliance (FPA) (2022), which defines itself as "a global coalition of gaming professionals and companies committed to developing quality games", organised a workshop in 2022 with experts from the U.S. Department of Justice to discuss the landscape of harmful behaviours prevalent among young gamers. The outcome of their discussions underscored the need for greater alignment of industry efforts and the development of strategies to address the emerging concerns. Earlier in 2020, the FPA collaborated with the Anti-Defamation League (ADL)'s Center for Technology and Society to produce the Disruption and Harm in Gaming Framework, which provides a comprehensive overview of the various forms of anti-social behaviour and harassment in gaming, detailing their types, causes, and impacts (ADL & FPA 2020a). Among others, their framework recognised cheating and game manipulation as a form of disruptive conduct in game environments, calling for greater attention to these activities. According to them, one of the recommended methods for analysing these behaviours involves segmenting the various "touchpoints" within games, including the out-of-game, pre-game, in-game, and post-game phases (ADL & FPA 2020b), to observe the behaviours in greater detail at each phase of interaction. While cheating has long been recognised as a major disruptive behaviour in gaming, the recent publication of these documents indicates that it is only now beginning to be understood as an issue with implications extending beyond the games themselves.

In 2015, CREST (2015), a non-profit organisation specialising in cyber security, collaborated with the UK's NCA, to provide insights into the gradual progression observed among some young gamers towards illicit online activities. According to them, this progression typically begins with an initial interest in coding and game modification, followed by refining coding skills through participation in social clubs, and gaining deeper insights into hacking techniques. As their skills advance, individuals can become more inclined to pursue unauthorised access

to information, which is often then reinforced by the ongoing peer influence. Finally, these individuals are approached by others or by groups already engaged in a wide spectrum of harmful online activities, who actively encourage their participation. These insights stem from observations made during nationwide intervention campaigns targeting individuals either directly involved in cybercrime or on its fringes. As highlighted in their updated report (NCCU 2017), many of these cases revealed that a significant proportion of those involved in cybercrime initially entered the domain due to an interest in game cheating and modding. While the reports emphasise the need for a more extensive analysis of these users, it is important to clarify that these conclusions are drawn from observations of individuals engaged in cybercriminal activities, rather than from insights originating within the gaming environments themselves. A more fundamental understanding grounded in game cheating itself is still needed to reveal the nuances of this presumed association.

Older reports also align with the broader argument these organisations share about the intersection of harmful behaviours and gaming. In 2004, before cheating was widely acknowledged as a distinct phenomenon within gaming (Consalvo 2007), a study reported that online games accounted for approximately 37% of harm-related cases in Taiwan, based on national police data, underscoring the proximity of gaming to other forms of online harm (Y. Chen *et al.* 2004). The scholars from this study emphasised the need to distinguish harm related to online gaming as a unique category, distinct from other forms of online harm.

As such, existing reports indicate that concerns and claims regarding harm are frequently ascribed to cheating or game manipulation, yet they often lack a holistic understanding of the broader phenomenon. These cases surface the need for a deeper understanding of the relationship between harm and cheating communities to establish a shared perspective among organisations. To address this gap, an inward focus on the social dynamics of cheating can illuminate the overlooked factors and clarify how these dynamics may be associated with potential harms. This approach aligns with the perspective of game scholars who emphasise the importance of examining community dynamics, including variations among creative

gaming communities and patterns of collaboration within diverse groups (Thiel & Lyle 2019). Moreover, it offers the potential to inform more targeted strategies for identifying specific channels and individuals in need of focused intervention.

7.2.2 Conceptual framework in online community research

Conceptual framework analysis offers a comprehensive understanding of a phenomenon (Jabareen 2009; Engelbart 1963). By establishing the relationship between constructs and variables, the framework lays a solid foundation for identifying and addressing emerging issues and challenges that may not be immediately evident. Within the field of CSCW, conceptual frameworks have been successfully applied in delineating the requirements for cooperative work (Schmidt & Bannon 1992), bridging context to groupware (Borges *et al.* 2004), and integrating CSCW into organisations (Y. Rogers 1994), among others. These frameworks have been predominantly applied to large-scale collaborations, such as public wiki communities (Morgan *et al.* 2013), infrastructure developments (Bietz *et al.* 2010), and crowd working (Stewart *et al.* 2017). Such applications of the conceptual framework demonstrate its value in illuminating the complex social dynamics inherent in online community research.

Building on Grudin's taxonomy (1994) and Johansen's matrix (1991), Lee and Paine (2015) propose through their framework analysis that goals in coordinated work are not always clearly defined, and individuals involved in such work may not necessarily share the same objectives. They advocate for a more flexible approach to "doing things together" without necessarily collaborating. By introducing the seven dimensions of the Model of Coordinated Action (i.e., synchronicity, physical distribution, scale, nascence, number of communities of practice, planned permanence, and turnover), they provide a systematic framework for analysing and distinguishing different forms of coordinated action. Their study offers intriguing implications for understanding cheating communities. These communities, while appearing homogeneous in their pursuit of cheating, actually encompass a variety of individual actors with distinct motives and methods of engagement. Some

members may directly collaborate by sharing resources and knowledge, while others simply coexist, benefitting indirectly from the shared cheating environment and community resources without active participation, as observed in Chapter 5. Integrating these nuanced aspects of community engagement provides a more systematic understanding of the dynamics within cheating, shedding light on how non-conventional practices related to cheating persist in various forms.

Game scholars have increasingly employed conceptual frameworks to understand complex phenomena in gaming environments. Classifications and taxonomies in past literature have provided a structured and shared language for comprehending the multifaceted aspects of gaming environments, enabling researchers to categorise games based on attributes such as genre, mechanics, themes, and player interactions (Yusoff *et al.* 2009; Kuo *et al.* 2016; Marlatt 2020; S. Sharma *et al.* 2021). Such a structured approach has helped identify patterns and trends that guide game design, and illuminate emergent cultural aspects. Over the past decade, we witnessed a similar evolution in game cheating, that aimed to encapsulate the factors influencing one's tendency to cheat (R. Sharma *et al.* 2021). Based on an online survey, Wu and Chen (2013) developed a conceptual model to examine the psychosocial factors influencing cheating in multiplayer games. Their research concludes that cheating is shaped by a mix of personal and external social elements, including one's social environment, attitudes towards game cheating, and their assessment of the results of cheating. As such, the existing literature demonstrates the value of conceptual frameworks in deepening our understanding of the intricacies within gaming environments, and providing a basis for refined analysis of complex community dynamics.

7.3 Methodology: Conceptual Framework Analysis

We employed Jabareen's eight-step conceptual framework analysis method (2009) to identify and synthesise concepts derived from our previous studies and existing literature. These relationships formed the basis for understanding how situations

involving cheating-related practices emerged. By following an iterative process of continually moving between data collection and analysis (Myers 2013), we systematically linked and associated relevant concepts to formulate meaningful assertions. In the following sections, we detail how Jabareen's method was integrated for constructing the conceptual framework:

Step 1-2: Mapping the data sources, extensive reading and categorising of the data. The first step involved conducting a literature search on cheating communities to understand the existing knowledge across both academic and industry contexts. To achieve this, we reviewed key literature on cheating that is recognised for its influence in both domains. Our dataset included 42 research articles, industry reports, and news articles in the fields of HCI, game studies, and cyber security. We used Google Scholar and ACM Digital Library to search the articles using keywords ('game cheating', 'cheating behaviour', 'multiplayer games'). We also examined the references and citations within key works on cheating to identify additional relevant literature. The inclusion criteria required that the work be an empirical inquiry dedicated to cheating in multiplayer games, focusing on perspectives gathered directly from users rather than studies limited to observational or backend data analysis. We stopped the search upon reaching theoretical saturation. This approach differs from systematic literature reviews in that it is not designed for an exhaustive search completion; instead, it identifies concepts from a range of different sources of data until a theoretical saturation is reached (Doyle 2003). The resulting collection of literature was categorised into soft interpretations: *technical actions, in-game actions, discussion forums, markets*, and *administrative practices*.

In parallel with the initial interpretations drawn from the literature review, we mapped the raw empirical data collected from our previous studies. We started by reviewing the interview data with game cheating players (n=70), which focused on the play experience (Chapter 4), the associated roles and platforms (Chapter 5), and the governance mechanisms (Chapter 6). We also incorporated the interviews

obtained during the preliminary pilot study (n=12) conducted prior to these studies. Consisting of online and offline interviews, the pilot study provided valuable insights into the players' general understanding of and initial experiences with cheating (further details about the study are in Appendix B). We then organised the key concepts into soft interpretations.

Step 3-4: Identifying, deconstructing, and categorising concepts. To consolidate our understanding of the cheating community, it is important to gain a clear and accurate understanding of its actual existence and characteristics. We analysed and coded the literature review to discern two key dimensions: 1) The properties of the social collective represented by cheating communities and the associated nuances that contribute to the understanding of these communities. At the same time, we conducted a parallel analysis of the empirical data, systematically organising it into distinct, informative categories. We focused on the same two dimensions and identified both explicit and implicit relationships between them.

Step 5-6: Integration and re-synthesis. We combined the codes and their relations from both the literature and the empirical data, and continued to categorise them into the most abstract units that embody the sub-level codes.

Step 7-8: Validating and rethinking the framework. The resulting collection of codes were refined in collaboration with two supervisors to align it with a coherent and comprehensive visual representation. We determined that the most effective presentation of the identified themes was through a table format. This table serves as a succinct overview of the identified concepts, falling under the overarching themes of motivations, actions, and governance mechanisms observed across an array of social structures.

Following the development of the framework, we conducted expert reviews to evaluate its applicability in guiding future interventions. These experts represented various sectors, including gaming, NGOs, cybersecurity, and law enforcement, each bringing their unique concerns and challenges in the domain of game cheating. These

reviews provided valuable insights into how well the framework aligns with the current state of knowledge and practice in the field. Drawing from their extensive experience, the experts were also able to point out aspects of the research that we might have overlooked or not fully considered, thus contributing to further comprehensiveness. The application of our framework within the context of the current state of the industries provided valuable insights for guiding the next steps in intervention strategies.

7.4 The Framework

Figure 7.1 provides an overview of the findings derived from the conceptual framework analysis incorporating but not limited to the insights detailed in Chapters 4, 5 and 6. It covers a range of collectives involved in cheating and their associated practices, moving beyond the initial findings to shed light on the broader implications of how the members of these communities engage with one another. In the framework, the emergent concepts have been classified under *motivation for joining the collective*, *individual practices*, and *governing practices* for each social collective identified. *Individual practices* refer to the activities performed independently by individuals within a collective, while *governing practices* refer to the mechanisms that support the effective operation of the collective.

This framework is rooted in the nuanced roles—both formal and informal—that individuals assume within these collectives, illustrating the varying degrees of engagement with cheating. For instance, participation in smaller peer groups might suggest a tendency towards casual experimentation, while engagement in larger, more cohesive groups facilitate a broader dissemination of cheating-related culture. This distinction demonstrates the value of analysing practices at both the individual and community levels to understand how the notion of cheating operates in different contexts. Although an individual action may seem insignificant on its own, its relevance emerges more fully when considered within the dynamics of a larger groups.

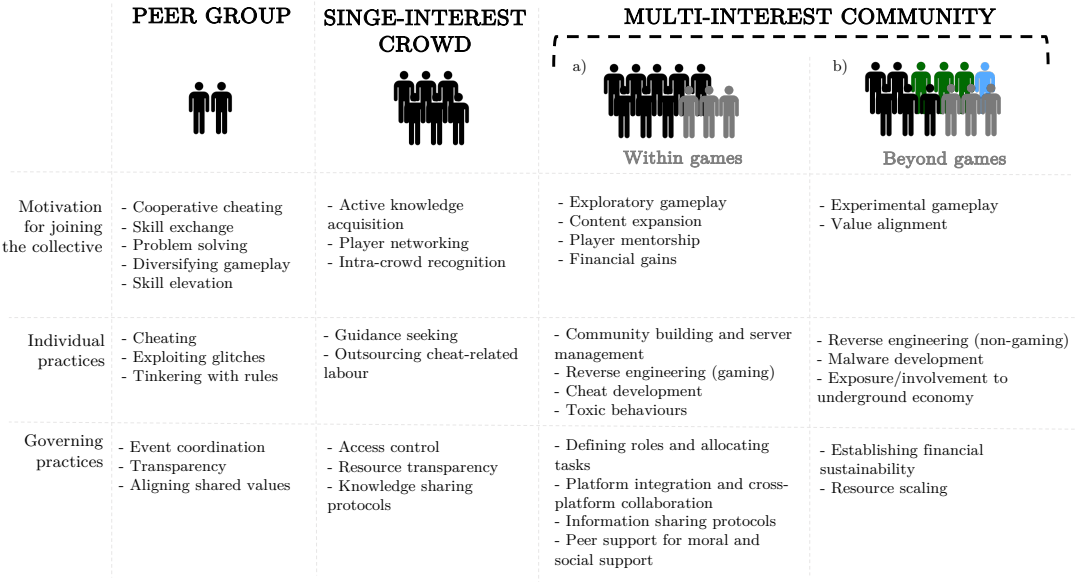

Figure 7.1: Overview of the four collectives observed within the cheating ecosystem.

Each column in the framework delineates a different size of the collective, from the smallest, a *peer group*, illustrated in the left-most column, to the largest, a *multi-interest community (for activities beyond games)*, shown in the right-most column. *Peer groups* are small groups of users—typically fewer than ten individuals—who are already familiar with one another offline. They can gather to play together as teams or opponents experimenting with their cheats in games. *Single-interest crowds* are a group of users who assemble to complete a specific task, often to enhance their cheating capabilities. We refer to a group that evolves further beyond this as *multi-interest communities*, which can be distinguished by whether they are 1) solely dedicated to competitive games or 2) also to activities beyond games.

The elements identified on the left cascade to the right as the size of the collective increases. While it does not imply that all collectives inevitably evolve in the order of the forms mentioned, there is a greater tendency for the nature of the collective to shift in such ways for those accommodating more experimental approaches to games. There are also aspects indicating that the codes are interlinked, such as the progression from exploratory to experimental gameplay. Although sharing similarities and existing along a continuum, the latter category engages more deeply with innovative and occasionally legally ambiguous techniques. Moreover,

individuals are not necessarily limited to a single collective at any given time, and in fact the framework highlights how the fluidity and interconnectedness inherent in these social structures enable the dynamic evolution from smaller entities to broader networks. This transition demonstrates the diverse 'expressions' that cheating can take beyond gaming platforms, and suggests how individuals may become more integrated into larger social networks as a result.

There are numerous avenues for deeper analysis of the framework, such as examining the platform settings, characterising the types of users within these collectives, and analysing the distribution of users engaged in specific practices. However, our primary objective is to understand the aspects that are of concern not only to certain individuals within the cheating community but also to those external to it. Therefore, while we acknowledge the comprehensive elements of the framework that could lead to different areas of research, our analysis is selectively focused on those facets that appear particularly contentious and may benefit from deeper consideration. This approach does not overlook the prosocial or constructive elements discussed in previous chapters but rather seeks to uncover the lesser-known negative aspects of cheating communities that often go unnoticed. At the current stage, the framework is better suited for making interpretive analyses rather than serving predictions about specific actions.

7.4.1 Peer groups

Peer groups represent the foundational social collective in game cheating. Users join these groups for various reasons. First, there may be a desire to form covert alliances with other like-minded players to gain unfair advantages or manipulate the outcomes of the games. They are also motivated to gain valuable insights, tips, and strategies by observing and participating in the trial-and-error processes with their peers. Together, they can overcome game obstacles and alleviate potential boredom arising from the inherent limitations of the original game design. Individual practices include the act of cheating itself, as well as other variant forms such as exploiting glitches and experimenting with game rules to aid their cheating efforts. In between

the players, transparency is important to ensure that members have access to reliable sources of information, considering the risks associated with cheating. Given their relatively small size, peer groups help foster an ad-hoc social experience centred around their shared interest in game cheating. For instance, within these peer groups, users might regularly exchange detailed insights on bypassing specific game security measures or share custom cheat scripts designed for popular multiplayer games. This not only provides a sense of belonging for users engaged in an activity often considered controversial in a public context but also validates their interests in the mechanics of game cheating.

7.4.2 Single-interest crowd

The single-interest crowd is characterised by users who converge with a shared objective, typically focused on augmenting their cheating capabilities. Building on previous insights into motivational factors, users are motivated to participate in such crowds by the prospect of gaining access to more reliable and accurate information, as well as the opportunity to engage with peers who share a similar interest in cheating. Within these crowd dynamics, individual reputation has been observed as a significant factor, commonly portrayed through one's online pseudonyms, for garnering attention and respect from fellow members. In terms of individual practices, users are notably engaged in actively seeking guidance from others. They may also solicit cheat-related information or enlist outsourced services from more specialised or technically savvy individuals.

For governing practices, a heightened emphasis is placed on overseeing the information and drawing the right individuals into the crowd. In some instances, users take the initiative to establish private groups, safeguarding shared information and updates from the public. Certain groups may establish mechanisms for controlling access to private groups, such as by allocating vetting processes or membership criteria, to ensure that only fitting participants are granted access to the insights shared internally. Dedicated users may also promote transparency on the integrity and origins of the information, coding scripts, and user identities,

enabling members to make informed decisions about the risks associated with cheating. A part of this procedure involves confirming whether a content has been plagiarised or derived from untrustworthy sources.

7.4.3 Multi-interest communities (for competitive games)

Multi-interest communities (MICs) represent expansive iterations of social collectives unified by a common interest in game cheating. They can be differentiated by either 1) their exclusive dedication to competitive gaming, or 2) their engagement in a wider range of activities that transcend the boundaries of games. Users motivated to join this collective are players seeking to explore diverse game styles, typically through obtaining state-of-the-art downloadable content, expansions, or updates. These introduce innovative challenges and gameplay narratives intended to extend the lifespan of the game. Moreover, certain users find satisfaction in assisting novices, guiding them to enhance their cheating skills, and navigating the risks of game cheating, which include detection by the anti-cheat systems or facing harassment by other cheaters. Alongside these attractive elements, users may also uncover opportunities for financial gains through roles related to cheating, such as cheat development.

Individual practices span multiple aspects in the context of MICs. Dedicated users take proactive measures to foster a cohesive and supportive community environment, taking initiatives such as creating discussion forums, organising community events, and facilitating open communication channels among members. Some are also involved in setting up, configuring, and maintaining gaming servers specifically dedicated to cheating (i.e., HvH servers). Certain users become involved in developing cheats themselves to gain a more hands-on understanding of cheating. Part of this involves learning to reverse engineer both the original game and the cheat software. However, attempts at reverse-engineering products developed by reputable and well-known users are typically met with strong disapproval within the community, even when such actions expose vulnerabilities that could ultimately benefit its members, as it is considered inconsiderate towards the creators. Further,

certain community segments are widely recognised for partaking in explicitly harmful speech and actions, targeting novice or unfamiliar users, creating a challenging environment to assimilate into the community. These behaviours encompass a wide range, extending from relatively less severe actions such as trolling and flaming to more cyber-dependent forms of harassment such as DDoS attacks and ratting (see Section 8.3 for details).

Governance mechanisms assume a more formalised structure in the context of MICs. In practice, this involves clearly defining and formalising specialised roles and responsibilities within the community, concerning roles such as mentors, moderators, or experts. Other mechanisms incorporate more organised protocols for efficient task distribution, taking into account different skills of each individual. Many such users are often either already familiar with each other or get introduced to key decision-making members through close-knit peer networks. Furthermore, individuals within the community also voluntarily provide peer support, acting as mature figures for boosting morale and providing guidance for those cheating.

The overall capacity of the community management goes hand in hand with the affordances of its overarching platforms. Community efforts extend to establishing a presence across various platforms, ranging from dedicated discussion boards to private discussion channels on Discord, for instance. This diversified approach allows them to capitalise on the benefits of a broader user base and a diverse set of communication tools.

7.4.4 Multi-interest communities (for activities beyond games)

These types of MICs share characteristics with those previously described but expand their interests and activities beyond gaming. Users in these communities actively seek out and engage with games that push conventional boundaries, showing a preference for alternative forms of entertainment. For such users, their involvement is not limited to passively exploring available options, and their interest goes beyond the playful intentions of the game design. They are willing to take additional risks, pushing further than what is typical for novice cheaters. This behaviour reflects a

keen interest in the underlying product and its associated infrastructures, particularly through inspecting and experimenting with components to explore their potential applications. Users in these communities often share a similar outlook on technology, where cheating is a part of a broader mindset that embraces challenging conventional standards—whether that involves breaking rules in games or even legal boundaries.

Irrespective of users' primary intentions, these communities may find their activities branching out beyond the traditional gaming domain, such as hacking or 'leak' forums. The range of actions within these communities commonly includes but is not limited to, reverse-engineering software, malware development, and commercial sales of these outputs. These actions evidently diverge from the playful motives in engaging with games; they are broader and potentially more harmful as they fundamentally consist of compromising and exploiting computer systems. Users who adopt these practices or seek content from these users may inadvertently come into contact with or be exposed to online communities engaged in cybercrime activities. Some members may actively participate in underground online marketplaces. Here, users interested in gaming can acquire in-game items and related credentials to gain a competitive advantage but they can also be introduced to cybercriminal activities and goods as a byproduct.

While the governance mechanisms closely resemble the preceding form of MICs dedicated to gaming, there is a distinct emphasis within these communities on establishing infrastructures to facilitate and maintain the associated businesses. This includes implementing decent financial management and administrative practices to ensure long-term viability. The emphasis also involves managing the additional content and resources that result from being part of a larger platform. Both experienced and novice entrepreneurs from different sectors recognise the potential for profit in other areas and are open to creating related commercial services. This results in a significant increase in the availability of the resources, including but not limited to those related to gaming cheats, enabling broader access and greater opportunities for participation across various domains.

7.5 Assessing Framework Applicability

This framework is designed to aid professionals from various industries whose work is impacted by or associated with cheating. To determine its applicability in real-world implementations, we carried out interviews to garner insights from industry experts who actively manage, analyse, or combat game cheating.

7.5.1 Method

The experts involved in this study come from four key sectors identified in the literature review: gaming, NGOs, cyber security, and law enforcement. We employed a combination of snowball and purposive sampling to identify individuals with relevant expertise in sectors that are either directly involved with or impacted by cheating. It is important to acknowledge the range of perspectives on game cheating, as different sectors approach the matter according to their own priorities and concerns. For instance, game companies are often seen as striving to find a balance between revenue generation and creative processes, which strongly impacts their decision-making (Kasurinen *et al.* 2017; Martin & Deuze 2009). A part of this includes prioritising combatting specific types of cheating that affect their profitability and player engagement. In contrast, NGOs on the internet that specialise in games typically prioritise promoting safe and inclusive spaces for gamers and gaming communities over their commercial success (ADL & FPA 2020a).

Moreover, cyber security companies focus on protecting the digital assets of games and understanding the broader threats they face in the online environment. Often collaborating with game publishers, these firms specialise in devising and implementing stringent security measures to protect a wide range of game assets, such as preventing unauthorised access to servers and changes to in-game items (Kaspersky 2021; Gostev *et al.* 2008). Lastly, law enforcement agencies are increasingly interested in understanding the potential implications of game cheating and modifications as factors that could contribute to youth engagement in cybercrime (NCCU 2017; Y. Chen *et al.* 2004). Their focus extends beyond the recreational

aspects of gaming to the illicit activities and potential harms associated with these behaviours.

Taking into consideration the interplay between these diverse sectors, integrating these perspectives into the framework offers a more complete understanding of the conceptual insights derived from the analysis, allowing us to explore tangible approaches for addressing related issues.

Participant	Industry	Expertise Level
E1	Gaming	Mid-level
E2	Gaming	Senior-level
E3	Cyber Security	Mid-level
E4	Law Enforcement	Senior-level
E5	Law Enforcement	Mid-level
E6	NGO	Senior-level

Table 7.1: Demographic profile of the expert participants.

Participants' demographic information is summarised in Table 7.1. Each interview ranged from 20 to 40 minutes, with only one conducted in person, while the rest were held online. These interviews followed a semi-structured format, starting with a 10-minute presentation of the framework to the participants. The interviews then aimed to gather initial impressions and insights into how the framework pertains to industry concerns, and specific areas within it that experts believed warranted further attention. All interviews were conducted in accordance with the ethical guidelines approved by the author's academic institution.

7.5.2 Overview

Expert participants (n=5) exhibited familiarity with the framework, drawing from their first-hand experience with various aspects of it in their work. E2, for instance, provided valuable insights into private forum adoption by users, hierarchical structures, and trust-building, all of which are significant factors in community formation. E3 confirmed that the elements outlined in the framework

were consistent with those observed in practice: "The type of subcultures that have formed in cheating groups [...], these are pretty much spot on [...] I definitely see a lot of these structures being reflected in what I have seen and experienced online". They added that detecting sentiments is one of their key ways of categorising a cheat: "If [the cheating that] is achieved has a sentiment of positivity, [it] might have a more passive relationship—like it's an [experience points] booster or a light wall hack. Just based on sentiment, you can kind of trace where that's coming from because that's much more likely to come from a group that is not malicious, [as opposed to] a group that's developing active DDoS attacks for instance". This view underscores the importance of distinguishing between the motivations of different subcultures within the cheating ecosystem, supporting our view that clear distinctions do exist between playful motivations and those with harmful intents.

Applicability of the framework

The participants offered insights into how certain behaviours observed within these collectives highlight key areas that require attention. For those whose work focuses on promoting the well-being of gamers, the presence of toxic behaviours and harassment within a community already perceived as disruptive added a complex and intriguing dimension to their initiative. E6 shared: "I've thought of cheating in the broad umbrella of disruptive behaviors but I don't know that I've seen anyone draw the line [before]", suggesting that these group distinctions bring to light the gravity of specific behaviours which have been overlooked. Based on their work and reflecting on similar observations of toxic behaviours in other communities, E6 noted that such communities encounter minimal or no resistance:

> "The lack of moderation then makes a space where the community becomes permissive of expressions that in other spaces wouldn't be permitted or there would be significant pushback. Let's say you have a permissive culture and a permissive platform that allows for a culture of hate and harassment to form [...] in these spaces that then are not visible to people who would hold those—companies, platforms, people — accountable" (E6).

The framework also gives law enforcement agencies a refined understanding of the underlying dynamics potentially associated with youth pathways into cybercrime. E5 commented that the framework "can really provide insight into the next iteration of the pathway that [they]'re looking to develop[...] for the gaming part". Based on their previous experience in investigating the pathways in cybercrime for young users, E4 highlighted the substantial value of this framework in advancing their efforts:

> "You're actually drilling down into what they're doing on those platforms, which I think is really helpful for us to try and ask the right questions the next time we start debriefing people [...] we're continuing to do debriefs but we wanna make sure now [that] it's next stage we are asking the right questions around that gaming environment: What's the dynamic in there? and the things that you're drawing out here are key to understanding who goes that way, who goes that way and why" (E4).

Further considerations

The participants drew from their industry experience to highlight further considerations given the temporal and geographical context of the findings. First, the period during which the data were collected coincided with the unique circumstances of the COVID-19 pandemic. These circumstances had substantial repercussions for game companies, leading to negative impacts on their productivity (Vuorre *et al.* 2021). Such reduction likely had an influence on the activity within cheating communities as well, influencing the empirical observations reflected in the framework:

> I think that period of lapse in the gaming industry [...] created a lot of communities that were very much just doing cheats for a single game for 1.5 – 2 years and that created some, almost cult-ish type, behaviours as the best way I can describe it, which I don't think I've seen pre-pandemic, where there is a clear leader in the community and they very much set the standards. And the leader can very often be abusive to an extent [...] (E3).

Secondly, it is important to note that this framework may be less applicable to specific regional contexts, as the notion of community dynamics adopted in the research is largely based on Western culture. E1 explained that their observations of cheating communities in an East Asian nation, known for its notable scale of its cheating, predominantly surfaced more intimate, smaller groups than the larger

communities described in the framework. They provided a possible explanation for this observation: "If I use a cheat I would not want people to know that nor want to talk [about it] publicly because using cheat is not a good thing. [...] Also I think in Asia [they] just tend to have a 'mind-your-own-business' [mentality]". This indicates that cultural variances may shape the social dynamics among cheating players, and that not all individuals involved in cheating are necessarily inclined to participate in active social interactions. These observations are consistent with previous research on cultural differences in online communities, which demonstrates that different groups prioritise varying goals and values in their communal participation (Kayes *et al.* 2015; Oliveira *et al.* 2016).

Prospective steps forward: participant insights

Alongside the given framework, the participants expressed a need for a more contextualised understanding according to different types of games. Given that the data were predominantly obtained from *CS:GO* and *GTA V Online*, E3 suggested developing approaches specifically tailored to individual genres, which would help clarify the unique norms and behaviours established by each gaming community. Similarly, E2 emphasised the importance of understanding the nuances of some of the observed covert relationships, such as the dynamics between sellers and buyers, including how they connect and the depth of their associations, to fully comprehend the full dimensions of these engagements.

To identify areas requiring intervention, E5 recommends an in-depth investigation into the social transition patterns of individuals moving from single-interest crowds to MICs characterised by diversified interests, and learning more about the characteristics of those specific individuals: "You'll be coming into the more multi-interest community—so what is happening right there? What makes them go from simply cheat[ing] to going more into the other toxic behaviours? What is the line there? I think that would be a perfect place to have a different kind of intervention because that feels to me [...] like a crucial moment of their development".

7.6 Areas for Focused Intervention

Integrating insights from expert reviews and preceding empirical chapters, the framework highlights three key areas that require attention from an intervention perspective.

7.6.1 Prevalence of toxic behaviours

Negative behaviours in cheating environments have been widely reported throughout our studies, often taking various forms of harmful conduct directed at others. These behaviours range from verbal abuse to cyber threats[1] but are often dismissed as simply a playful part of the game.

When considering the community dynamics central to the values within CSCW, it is valuable to look beyond the negative connotations typically associated with cheating. While there may not necessarily be a prevailing desire for the success of cheating communities among those outside of them, their potential repercussions on the well-being of the individuals can be substantial and far-reaching. This issue becomes particularly problematic given that adolescents make up a significant portion of the player base and may not fully understand the extent of the risks present in the online environments they are navigating (M. D. Griffiths *et al.* 2004; Raney *et al.* 2006). Given the presence of technically savvy users on such platforms, their lack of awareness increases their risk of harm, including potential exploitation or abuse by adult players. Such circumstances would likely be considered alarming if they occurred in a more public, non-gaming context. These considerations indicate that a more nuanced approach to the subject is needed beyond the preconceived notions of cheating.

The framework also reveals that many victims of toxic behaviour remain silent due to the stigma associated with cheating. The negative connotation discourages victims from coming forward as they fear backlash or ridicule for engaging in cheating in the first place. This issue is exacerbated by the lack of designated spaces or authority figures to whom victims can turn for support and assistance,

[1] Additional details regarding the nature of these threats can be found in Section 8.3.1

leaving them isolated. As a result, the absence of support not only perpetuates harm on silent victims but also enables malicious actors to continue the behaviour without consequences.

There is a clear need to provide a safe environment for vulnerable players. One potential approach to addressing this issue is the establishment of an anonymous reporting and support system. This system could offer a confidential, user-friendly interface allowing victims or witnesses of misconduct to report incidents without fear of retaliation or stigma associated with cheating. Ideally, this is set up and run by parties that are not directly involved in the gaming industry, such as NGOs, but yet still appear accessible and trustworthy in supporting the users. To enhance the likelihood of reporting, an accessible link could be integrated directly within the gaming environment, connecting users to a separate interface that visually distinguishes the reporting mechanism as independent from the game itself. This approach would provide players with a more reliable avenue for seeking support when needed.

7.6.2 Absence of ethical boundaries

The empirical data underpinning the framework reveals a distinct lack of moral and ethical awareness among individuals engaged in cheating, indicating a broader tendency to reinterpret or reject conventional societal standards of acceptable conduct. Behaviours such as doxxing and trolling appear to be governed by social norms that diverge from the broader societal expectations, largely because community recognition and status are highly valued above all else within these collectives. As noted earlier (in Section 6.5.1), positive interactions within these communities can mask the systemic problems arising from toxic behaviours, creating a dissonance between the sense of camaraderie and the harm that occurs beneath the surface. In fact, negative conducts such as trolling are more than overlooked; they are internalised and deployed as gatekeeping mechanisms to maintain the perceived integrity of the community (Allison *et al.* 2019). These cases indicate

that, without external oversight, toxicity has become a defining feature of the culture of the community.

These conditions are likely made possible as competitive gaming practices are typically viewed through the prism of one's own success and status, where being a 'winner' in the wider context seemingly justifies actions that would otherwise be deemed unethical or unacceptable. Prior research suggests that the roots of problematic gaming behaviour can be traced to how self-worth is framed within games (King & Delfabbro 2014). This implies that within cheating communities, detrimental narratives might thrive under the guise of competition and maintaining self-worth, often at the expense of threatening others in vulnerable positions. This is of particular relevance given that young users represent a substantial segment of the gaming population and may be especially susceptible to negative influences (Byron 2008; Przybylski & Weinstein 2017). Our data supports this as well, revealing that many began cheating during their minor years (Section 5.3.3). These aspects highlight the importance of moral and ethical guidance in promoting the well-being of minors.

Raising awareness and providing education beyond gaming environments can help mitigate negative conduct by expanding the reach of support networks available to those affected, as demonstrated by previous initiatives in broader domains (Türkay *et al.* 2020). In the following context, this can be approached in three ways with interventions tailored to toxic users, cheat developers, and victims. First, articulating clear and unambiguous guidelines for acceptable behaviour constitutes a key step in steering users away from toxic practices. These guidelines should be prominently displayed and easily accessible to all platform users, reinforcing the expected standards of conduct. To cultivate an environment of respect and support, campaigns can be used to raise awareness of the consequences of harmful actions. Awareness can also be increased within the core gaming environment through informative banners displayed within gaming servers. These banners can disseminate educational messages as ongoing reminders to foster an atmosphere of mutual respect within the community. The messages may also include instructions

on technical security measures, such as inspecting and configuring firewalls, analysing network traffic, or outsourcing security measures to external providers, enabling players to better protect themselves against potential threats.

Second, initiating targeted cyber security awareness campaigns within forums and discussion boards dedicated to cheat and malicious software development can help individuals involved in these activities better understand the ethical implications and broader impacts of their actions. Rather than solely emphasising legal consequences, cultivating an understanding of how their activities potentially harm others can foster a sense of personal responsibility. Further, individuals who possess relevant skills can channel their capabilities towards more constructive contributions to the cyber security industry. Section 8.5.3 elaborates on how, with proper training, such individuals can be guided to make more prosocial contributions to the field.

Finally, users must be able to recognise when they have been harmed. In particular, they should be informed about the accessible online and offline spaces where they can discuss and report their experiences, even if the harm occurred only on the periphery of the gaming environment (ADL & FPA 2020b). In practical terms, implementing mechanisms such as awarding points or vouchers—or even exempting users from their history of cheating following a ban—could incentivise reporting. Such measures can help foster a more supportive atmosphere for individuals affected by these behaviours.

Publishers will need to balance competing priorities mainly between user well-being and mitigation of cheating. There are ways to disincentivise cheating and promote ethical behaviour without directly intervening in communities. For example, game developers can increase awareness of the risks associated with cheating by publicising evidence-based discussions regarding the assessment of such risks. Unlike the typically negative framing of cheating by game publishers, Activision Blizzard (2021) released a report in a neutral tone that analysed a deceptive hacking tool marketed as a cheat. The report focused solely on providing a technical breakdown of the malware, marking a shift from the normative tone usually present in formal discussions of cheating. As such, raising awareness of the risks associated with

these tools through such platforms can serve as an effective deterrent for novice users. This approach would help users with limited security awareness become more informed, and also develop a more favourable perception of the game publisher as attentive to player needs.

7.6.3 Overlooked supporting roles in cheating

The unchecked growth of the large collectives operating at the fringes of legality warrants closer attention. In particular, the proposed framework sheds light on the roles and practices that remain insufficiently addressed in the prevailing discourse surrounding cheating. While not necessarily participating in the games themselves, the developers and sellers of the cheats play integral roles in executing the development, maintenance, and dissemination of resources. These groups amplify cheating as a phenomenon by providing users with the knowledge and tools needed to exploit the game and evade detection. These cheats undermine the very efforts of the game publishers to maintain a balanced gaming environment (U.S. District Court 2021; U.S. District Court 2022; Cox 2022; Davis & Price 2008). Moreover, security researchers have also highlighted the importance of examining the environments where such tools circulate (Karkallis *et al.* 2021; Pontiroli 2019; Kaspersky 2021). Here, individuals may attempt to apply this knowledge to non-gaming domains or, in the process of experimenting with cheats, may unintentionally become victims of malicious cheating software themselves (Cho, Lusthaus, *et al.* 2023). The intersection with multiple cyber security risks highlights the need for continual monitoring of key figures and informed caution in related activities.

Authorities and researchers can introduce several intervention methods to monitor or control such modes of engagement. They can analyse open-source projects on public websites to observe how cheat scripts are developed and evolve over time, gaining insights into the patterns and individuals associated with these projects. Using a more discreet approach, they can create understated profiles to integrate into small to medium-sized private chat groups, and gather evidence against entities developing cheat software. By participating in discussions and

relevant activities, one can build trust over time and identify the key individuals involved in the development and dissemination of cheats. This approach requires the individual behind the profile to have at least a basic familiarity with the game in question and an understanding of the specialised jargon related to cheating.

7.7 Industry Accountability

Assigning clear lines of accountability is crucial for drawing up interventions and identifying specific domains of harm within online platforms. In the following, we consider the positions of key stakeholders on cheating to highlight how their perspectives relate to these practices and their potential to mitigate the associated harms.

7.7.1 Social media companies

Integrating the framework with the findings from Chapter 5 brings into focus certain underlying platform structures—notably social media companies and search engine providers—and raises questions regarding their accountability. In particular, the symbiotic relationship between cheating communities and the functionalities offered by these platforms demands deeper consideration by industry practitioners and academics (TeBlunthuis *et al.* 2022; Moser *et al.* 2017). The findings illuminate how platform affordances enable multiple ways of perpetrating harm among cheaters in online spaces that lack sufficient oversight from authority figures. These practices often receive little to no attention, largely due to their niche nature and the negative stigma associated with cheating. However, previous work has shown that the actions of smaller communities may still reverberate throughout the broader ecosystem (Hwang & Foote 2021; TeBlunthuis *et al.* 2022), highlighting the need to understand how seemingly niche groups come to shape broader dynamics.

The enactment of new regulations, such as the EU Digital Services Act (DSA) 2022 and the UK's Online Safety Bill 2023, suggests a timely paradigm shift towards heightening responsibility for social media companies. The DSA imposes rigorous legal requirements on platforms with over 45 million active monthly users to combat online hate speech and disinformation through stringent content moderation and

increased transparency. In a similar manner, the Online Safety Bill imposes a requirement on technology companies to uphold standards to prevent harmful content on their platforms and ensure user protection. Focusing primarily on safeguarding minors, the notion of harm here extends beyond illegal content to encompass any potentially harmful or offensive material.

Both pieces of legislation are centred on the concept of duty of care—a legal concept that originates from the law of negligence—mandating robust measures to mitigate user exposure to online harm. They are particularly relevant to social media platforms known for hosting gamers, such as Discord, due to its capacity to facilitate user-generated content and interactions that range from trolling and bullying to cybercrime and illicit content sharing (Jiang, Kiene, *et al.* 2019). In light of our findings, this calls on companies to address negative activities as they arise, regardless of their own prevailing views on cheating. As Discord is just one of many social platforms within the online ecosystem, the central challenge lies not in any single technology but in the evolving forms of harm that exploit new opportunities across these environments. This highlights the need for an industry-wide commitment to user safety across platforms, rather than focusing only on individual cases. The following legislative advancements represent a significant step in requiring social media companies to accept greater responsibility for the content shared on their platforms. With financial penalties and the risk of market exclusion now at stake, these companies ought to adopt a more proactive stance in addressing these concerns going forward.

7.7.2 Game publishers

As primary architects and stewards of their online environments, game publishers hold a degree of responsibility for the issues that stem from cheating (Gillespie 2018). They design not only the digital landscapes but also the intended social dynamics, establishing the boundaries within which specific modes of engagement occur. Developing games involves more than simply creating playful environments, as it also necessitates careful consideration of the underlying rules and systems that shape

these spaces, including evaluating potential repercussions of play and mitigating harms that could jeopardise the well-being of their users. The creators of the games are therefore responsible not only for ensuring fair play but also for providing a safe and reliable environment where users can pursue their playful activities.

In practice, this responsibility involves implementing robust security frameworks to protect users, assessing the prosocial values upheld within associated communities, and proactively addressing the emerging issues related to user conduct. These considerations should be addressed with the aim of benefitting the broader ecosystem (ADL & FPA 2020b; Poretski & Arazy 2017; Curtis *et al.* 2022; AC 2023).

7.7.3 Advocating for cross-industry collaborations

No single sector can manage the entire burden of mitigating the harms arising from countless networks of online interactions. Considering the interconnected nature of the online ecosystem today, cross-sector collaboration is needed to effectively address the issues linked to cheating, harmful content, and other deviant behaviours. In 2022, the Atlantic Council's Digital Forensic Research Lab assembled a diverse group of experts to formulate an actionable agenda aimed at enhancing user protection and safety principles in future online spaces. There is significant overlap between the areas outlined in their final report (2023) and the perspectives detailed in this research, underscoring the importance of examining how game cheating and social media together shape user experiences of safety and play. This initiative exemplifies the kind of proactive outreach we advocate, as it not only initiates meaningful dialogue but also broadens the reach of these important conversations to a wider audience.

The emphasis on user autonomy and content creation on social platforms such as Reddit and Discord has allowed cheating communities to leverage their features for widespread presence. This development illuminates fundamental conflicts of interest among key stakeholders, specifically social media platforms, game companies, and users themselves. While these platforms serve as hubs for community formation and interaction, they can inadvertently undermine the integrity of gaming environments

by enabling users to exploit vulnerabilities in their systems. These platforms not only enable cheating communities to adapt to anti-cheating measures, which are often costly to develop, but also facilitate user access to resources and networks that would otherwise be hard to obtain. This dynamic highlights the need for social platforms to adopt more nuanced design and policy strategies that promote community integrity and respond to the concerns of other stakeholders. For game developers and publishers, such an approach would inevitably present significant challenges as they strive to balance the goal of supporting active gaming communities with the need to protect their own interests.

Mitigating the unintentional growth of harmful communities requires coordinated action among platform owners, game publishers, and law enforcement agencies to ensure user safety in online spaces. The previous section outlined initiatives such as providing support for victims of negative actions, developing prosocial online communities in collaboration with NGOs, and guiding individuals involved in contentious practices towards more positive and constructive career paths. By fostering dialogue among relevant industry bodies, we can work towards developing tangible outcomes and gaining deeper insights into users who may be vulnerable across various layers of the online ecosystem.

7.8 Conclusion

This chapter demonstrates how the social structures underlying cheating practices reveal distinct value systems across different collectives, highlighting the limitations of prior research conducted from an external perspective in fully capturing these internal dynamics. Although not all identified behaviours are explicitly unlawful, many still cause considerable disruption to the activities of others, including harm within the community itself. We discussed how the identified harms could be addressed by implementing educational and awareness campaigns across different platforms, providing independent support for victims, and incentivising reporting. The following analysis offers a detailed view of the complexities of cheating and suggests that relying solely on traditional normative perspectives is not sufficient

to effectively design and identify avenues for intervention. This work advocates for cross-industry collaboration to deepen the understanding of the observed dynamics and develop targeted strategies against challenges in gaming and broader online ecosystems.

8 Discussion

Contents

8.1 Overview of Goals and Results

This thesis was motivated by the need to understand the intra-social aspects of game cheating which have received little attention in prior literature. We initially posited that the lack of understanding of the cheating phenomenon hinders our ability to identify areas of harm and apply focused interventions. To establish the baseline of understanding in this domain, we explored social dynamics and practices within cheating communities, beginning with identifying social dynamics among cheaters in games, and extending to social practices in a wider range of outer-game spaces. The following sections outline the insights from our investigations, detailing how they contribute to our understanding of cheating communities and guide future intervention strategies.

8.1.1 Ch. 4—Exploring in-game social dynamics

Chapter 4 aimed to establish how social dynamics emerge among cheating players within games to provide insights into how these dynamics may transfer into broader communities. The investigation focused on social experience as a component of the broader concept of play experience based on the GameFlow framework. We identified four social dynamics: competition, support/camaraderie, cooperation, and conflict. By considering both positive and negative aspects, these dynamics reveal a range of interactions among cheating players that extend beyond the act of cheating. The enjoyment players derive from these interactions indicates that their social experiences involve more than simply distinguishing themselves from or aligning with fellow cheaters during gameplay. Instead, these in-game interactions often lead to broader and more sustained relationships that reach beyond the boundaries of the game itself.

In addition, the GameFlow framework incorporates other play elements, such as facing challenges and acquiring skills, pinpointing aspects that cheating players consider when engaging in games. Our findings indicate that although cheating appears to undermine the game elements designed to provide enjoyment from the outset (e.g., bypassing obstacles and having unlimited lives), it does not inherently diminish the enjoyment for cheating players. Instead, cheating fosters a form of meta-game, creating an additional layer of interaction on top of the original game design. While our dataset did not encompass the entirety of the GameFlow framework, its theoretical elements proved valuable in probing the perspectives of cheaters on their experiences. Our observations also included player perceptions of game publishers to enrich the existing understanding of why players cheat in games (Kücklich 2008; Consalvo 2007; V. Chen & Wu 2015). In this process, we uncovered the negative sentiments that players hold against them and how some players engage with the activity to validate these sentiments.

8.1.2 Ch. 5—Identifying the facilitators

Chapter 5 explored the participatory practices that facilitate cheating by examining the spaces outside traditional gaming environments. Here, we examined the types of activities, platforms, and benefits derived from engaging in these game-adjacent spaces. Key practices in these communities range from active involvement such as selling, developing, and distributing cheat software to more passive and innocuous activities such as lurking. These findings demonstrate a wide range of activities, encompassing both legal and illegal behaviours as well as playful and serious forms of engagement. We also highlight how certain users occupy dual roles as both providers and consumers of cheat-related activities, engaging in specific ways to assist those seeking resources while these actions simultaneously contribute to keeping the domain active. This demonstrates how these practices foster meaningful interactions that significantly influence the personal and professional lives of users. These insights were further enriched in the latter part of the study, which examined the incentives driving participation in these communities. The findings indicate that

users are motivated to engage in these communities to build expertise (e.g., coding and understanding game architecture), pursue monetary gains, and experience enjoyment derived from a sense of belonging.

The study also observed how platforms help facilitate the practices surrounding cheating by providing a reliable space to augment the in-game cheating experience. This involves assisting with key interactive modes underlying the activities above, such as guiding access to information and social networks, aiding visual communication, and fostering technical collaborations.

We observed that both the users who actively contribute to the community and the platforms that enable these activities associated with cheating operate without third-party intervention. In particular, the activities situated at the more serious or illegal end of the spectrum highlight the risks that may negatively impact the broader online ecosystem. We revisited these aspects later in the thesis in Section 7.6, offering an analysis of the potential harms linked to these practices.

8.1.3 Ch. 6—Analysing governance mechanisms

In this chapter, we adopted an organisational perspective to better understand how the identified practices and users assemble in dedicated online spaces. Following the governance framework, we designed our study to identify the key resources, power structures, and modes of community integration and user interactions. The study revealed that communities seek to manage cheat scripts and programmes that are undetected, effective, and exclusive as their key resources of interest. The social network of peers also plays an integral role in gaining recognition and access to such resources. In particular, we observed a notable distinction in how smaller, harder-to-access communities and public communities with a substantial user base cater to their users.

The findings detail the practices and dynamics surrounding moderator involvement and rules enforcement, which largely resonate with those of other communities documented in prior literature. We found that users with moderator privileges or similar permissions are frequently embedded within pre-existing private networks of

users. We also observed a distinct power dynamic wherein certain individuals, despite lacking formal authority such as moderator status, exert considerable influence within the community by virtue of their established reputations. Within these communities, there were diverse forms of social bonding, ranging from opportunities to establish new friendships and find companions for HvH gameplay to encountering challenges related to social integration, often exacerbated by the presence of toxic behaviours. Inexperienced or younger users were disproportionately affected by these integration challenges. We deduced that the observed toxic behaviours may function as self-protective mechanisms, enabling individuals to navigate the inherent risks and uncertainties associated with cheating.

From a governance perspective, cheating communities exemplify the adoption of power to achieve coordination among members who are unified by a shared interest in cheating, yet would otherwise exhibit a tendency towards rule-breaking and disregard for broader community norms. This is particularly intriguing, considering the challenges posed by the risks of cheating. Furthermore, this chapter demonstrates that individuals participate not solely on the basis of their own initiative, as highlighted in the previous chapter, but also in accordance with internal social structures that enable the sustained management of the community as a whole.

8.1.4 Ch. 7—Scoping and highlighting areas for intervention

Chapter 7 presented the types of social collectives associated with cheating by adopting a conceptual framework analysis. After reviewing the motivations for joining these collectives, individual practices, and governance mechanisms, we elaborated on the complex nature of these communities, noting that they are not merely spaces for rule-breakers but rather multifaceted collectives comprising both potential victims and individuals who propagate harm. We then incorporated expert feedback to evaluate the applicability of the proposed framework in guiding industry interventions. Following this, we identified areas of potential harm that warrant further investigation: 1) the prevalence of toxic behaviours, 2) the lack of

ethical boundaries, and 3) the insufficient oversight of those supporting cheating. For each category, we proposed targeted intervention strategies, such as establishing anonymous reporting mechanisms for victims, disseminating awareness campaigns and educational materials, and implementing monitoring systems for activities associated with cheat development. These measures can be enacted beyond gaming environments, allowing users, especially victims, to engage without the constraints typically associated with cheating.

Following this discussion, we reflected on how certain industries remain largely overlooked despite facilitating activities that negatively impact others. This lack of scrutiny stems partly from the cross-platform nature of these activities, which limits effective oversight in practice, and partly from the perception of game cheating as a niche illicit practice beyond one's immediate responsibility and area of expertise. With new legislation on the horizon to better protect users online, however, addressing these issues will become a requirement for platforms, rather than a matter of choice. We therefore recommend fostering more cross-industry collaboration and public dialogue to align the initiatives for addressing these concerns.

This chapter revisits the core motivation for our research: to develop a unified framework for understanding cheating communities and to identify critical areas requiring attention. Drawing on the comprehensive data and concepts from our studies, we have gained deeper insight into the ramifications of these practices. Within the interconnected online ecosystem, where communities and platforms intersect, major platforms are often able to deflect responsibility, resulting in ongoing ambiguity over stakeholder accountability. Given the potential harms associated with these user practices, this chapter underscores the need for stakeholders to take more proactive measures to safeguard users. This call to action applies broadly beyond cheating communities to other online spaces where users may still be vulnerable to social harm.

8.2 Reflections on the Moral Stance of Cheating Communities

8.2.1 The dual capacity for disruption and civic engagement

Throughout this research, our understanding of cheaters has developed considerably, moving beyond the simplistic dichotomy presented initially in Section 2.4.1. While public discourse often frames game cheating negatively, this research reveals a nuanced spectrum of motivations and dynamics within the cheating ecosystem.

Instances such as the normalisation of toxic behaviours for gatekeeping (Section 6.5.1) or protecting valued contributors from public critique (Section 6.4.2) illustrate the multifaceted nature of cheating communities. While these actions may appear negative, they are often rationalised within the community through a prosocial logic, reflecting a distinct moral landscape that members navigate. This internal justification serves to uphold community cohesion even as it perpetuates exclusionary and harmful practices. Cheating communities also display explicitly harmful behaviours, such as doxxing vulnerable users for purposes of intimidation, which reveal a more overtly damaging dimension to their practices.

The negative aspects of cheating communities are counterbalanced by more altruistic practices, such as promoting civic engagement and offering voluntary support to users and novices (Section 4.4.2). Players may engage in cheating for constructive reasons as well, motivated by a desire to enhance the gaming experience for themselves and others. Chapter 4 positions cheating as a form of prosocial resistance to standardised power dynamics, centered on practices that game publishers perceive as predatory. These approaches situate cheating within a broader discourse of social justice, where players negotiate new meanings and assert agency within gaming environments (V. Chen & Ong 2018). These findings highlight the capacity of such communities to act as agents of community building as well as disruption.

This thesis calls for a more nuanced understanding of cheating, revealing the duality present within its social spheres. Cheaters are not merely rule-breakers

or exploiters but also users with a varied range of motivations and community ties. Some seek recognition for bypassing anti-cheat systems, while others pursue a sense of belonging. In synthesising these insights, this research presents a balanced perspective on game cheating, recognising its dual capacity to both challenge and contribute to the gaming ecosystem.

The positive and negative aspects of cheating communities present valuable opportunities for industry and academic work going forward. The positive dimension suggests a more adaptive approach, encouraging further exploration of the constructive contributions these communities offer. This perspective would foster a new direction in gaming that balances creativity and freedom with respect for players' aspirations to learn and enjoy their play experience. By engaging more deeply with these dynamics, the gaming industry has the opportunity to refine their outputs in ways that truly resonate with players' experiences.

On the other hand, the negative facet draws attention to the issues that are often overlooked (as observed in Chapter 7.6), particularly those affecting younger users whose experiences are largely absent from current reporting frameworks in the context of cheating. In these cases, some users display a lack of ethical judgement, engaging in behaviours that are legally ambiguous or unlawful. Targeted interventions are therefore necessary to address and mitigate these harms.

8.2.2 The self-perception of cheaters

Throughout the data collection period, it became evident that individuals deeply involved in cheating rarely identify themselves strictly as cheaters in the conventional sense. Rather, they consider themselves regular players within the gaming community, distinguished only by their advanced knowledge of progressing in games. This insight complements the civic and prosocial values observed among some players, highlighting the dynamic between self-perception and ethical positioning in the cheating ecosystem. While many attribute exclusivity or a degree of social status to covert cheaters, the majority of participants perceive themselves as typical players and social media users, without a pronounced sense of uniqueness. Exceptions are

still found among those who have attained significant recognition or influence within these circles.

8.3 Game Cheating in the Context of Cyber Security

In Section 7.2.1, we reviewed concerns regarding the potential link between game cheating and cybercrime (NCCU 2017; CREST 2015; FPA 2022; Y. Chen *et al.* 2004). Drawing on insights from this thesis so far, we are positioned to revisit and build on these initial assertions. Below, we summarise the two studies that emerged from the core research conducted in this thesis: one examining cyber threats as a mode of toxic behaviour observed within cheating communities (Cho & Flechais 2022), and another exploring the parallels between game cheating and cybercrime (Cho, Lusthaus, *et al.* 2023).

8.3.1 Cyber threats as a way to impose toxicity

Little is known about the threats players face while pursuing cheating. Vulnerable players can be left defenceless without any institutional guidance or support while being exposed to the harmful behaviours prevalent in many competitive games. These issues have attracted significant interest in academic research and gaming NGOs (ADL & FPA 2020a). Early findings on governance mechanisms demonstrated that toxic behaviours are prevalent in cheating communities with limited third-party oversight. Cheaters are rarely afforded protection from the public or industry as games are structured to validate only those who adhere to established rules, reinforcing the negative moral perceptions of cheating. Although cheating is widely recognised as inconsistent with prevailing norms, users often operate within distinctive normative frameworks, exposing the underlying social issues that remain inadequately addressed. Our analysis therefore examined the extent of the harmful behaviours within these communities to better understand these dynamics.

The methodology involved re-analysing the first phase of the data collection in Chapter 6, which included prominent instances of toxic behaviour, such as trolling

and doxxing, in *CS:GO*. The study here focused on toxicity as the global theme and employed selective coding to identify relationships between toxicity and other categories. Grounded theory (Corbin & Strauss 1990) was applied to allow concepts and theories to emerge organically from the data.

The toxic behaviours identified in our data were classified into four types of harm, ordered by the immediacy of the threat, as shown in Figure 8.1. *Social harm* concerns the impact on one's ability to integrate into the community, including forming relationships and building meaningful social capital. *Emotional harm* pertains to the ability to maintain emotional well-being, potentially leading to feelings of depression and anxiety when negatively affected (Ewoldsen *et al.* 2012). *Cyber harm* involves threats to the protection of computer networks and data, while *physical harm* involves threats to the safeguarding of physical assets in offline spaces.

We discovered that instead of operating as isolated acts, many of them interconnect to amplify the detrimental effects on victims. We focus on *cyber impacts* for the purposes of this subsection where we stay within the scope of online harms but we acknowledge that other harms demand just as much attention (Cho & Flechais 2022).

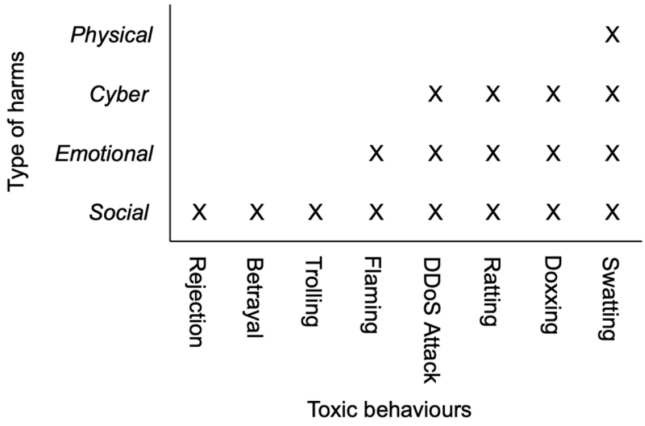

Figure 8.1: Classification of toxic behaviours according to four types of harm.

Toxic behaviours related to cyber harms encompass actions that inflict cyber harm alongside social and emotional harm: DDoS attacks, ratting, and doxxing. These behaviours primarily seek to manipulate computer systems in order to elicit negative social and emotional responses from targeted individuals. For instance,

DDoS attacks attempt to thwart access to computer networks by flooding the victim's system with malicious requests. Participants expressed a lack of trust in both servers and fellow users encountered during cheating activities, insisting on the importance of consistently activating VPNs prior to joining a server as a means of self-protection. This suggests that, even within environments comprised of users who share similar interests in such modes of gameplay, some users remain vulnerable to the challenges that impede their ability to access and utilise intended gaming resources.

Remote access trojan (RAT) was also frequently mentioned by participants as a means of causing harm. RAT is a malicious software that uses backdoors to take over the administrative control of a victim's computer. Deploying RATs, referred to as ratting, is a common method for exploiting vulnerable or inexperienced users in cheating communities. U17 raised particular concerns about RATs and their potential impact on younger players who may unknowingly download malicious content, granting direct access to their computers and leaving them vulnerable to online threats. Our data showed that non-tech-savvy users who sought help to resolve the infection in the community were also likely to be ridiculed.

Both ratting and DDoS attacks operate by targeting the victim's computer resources, representing alternative forms of toxic behaviour that have not been previously identified in academic research on toxicity. These observations point to the ways that experience gained through game cheating may be associated with identifying and leveraging system vulnerabilities in contexts beyond gaming.

Benign users may also be targeted by doxxing, the public release of personal information intended to unmask individuals and facilitate further harassment (McIntyre 2016). This practice can serve as a means of asserting dominance by competitive-minded users and may also be carried out by organised groups or "doxing-professionals" who will "try to dox [users] at all costs" when desired (U23).

This study broadens our understanding of toxicity within cheating communities by highlighting the dynamics through which cheaters simultaneously occupy the roles of both perpetrator and victim. Our findings show that toxic behaviours are not inherently tied to specific platforms but rather to individuals themselves,

aligning with previous research on online toxicity (Maher 2016; Massanari 2017; Fox & Tang 2017; Chesney *et al.* 2009). The frequent occurrence of toxic behaviours beyond core gameplay environments—such as on platforms for discussion, chat, or general social interaction—underscores the importance of platform accountability in protecting users. This suggests that the features and user capabilities of these platforms may facilitate certain toxic behaviours. In particular, the study shows that certain perpetrators disproportionately target younger or less experienced individuals, revealing a clear risk to user safety and highlighting an area in need of greater attention. Given these dynamics, it is important for platform developers and administrators to implement appropriate measures and promote safer environments for users (see Section 7.6).

Users who are prone to toxic behaviours

Some users are notably more susceptible to toxic behaviours in cheating communities, primarily due to lack of competence, anonymity, and perceived otherness. Inexperienced newcomers often face social rejection and ridicule due to their perceived lack of value to the community, as evidenced by the nature and phrasing of their questions when seeking help for instance. Such interactions may result in newcomers being labelled as lazy or ignorant for not conducting prior research, even when this is not the case, discouraging novices from participating in the community as a result. This is further exacerbated by the emphasis on established reputation within the community (Section 6.4.3). Newcomers are often dismissed if they lack recognition or do not possess exclusive cheats, highlighting the importance of social standing within relevant networks over simply having access to cheating tools.

Age consistently emerged as a significant factor in the victimisation of users. Existing users were mostly unwelcoming to newcomers who they deemed too young: "I think of a 15 year old [...] and they're like wondering how to [cheat] and why they're not hitting, killing anybody. And then they say one word of how do I, why am I not killing anybody and you know their voice is high [...] and it's almost an immediate target for older players or younger player for that matter to kind of just

start bullying them" (U19). U17 also claimed that "younger players under the age of [...] 16–17 that have a higher voice" are more likely to be targeted: "If they join [an] HvH server, and there are people talking, people will say, 'you know you're too young to cheat', 'you have to be in this certain age', 'your voice is still high', 'how old are you' and it just paves a line for that particular player to get bullied and targeted. A lot of people jump [...] on the bandwagon and dogpile on those players" (U17).

Participants also reported evidence of toxic behaviours rooted in inherited traits such as race and gender. They observed that female players, in particular, were actively dismissed and excluded, noting that it was not uncommon for them to experience targeted harassment, bans, and even doxxing solely on the basis of their perceived female identity. These patterns of behaviour underscore the deeply ingrained biases within cheating communities that perpetuate the culture of toxicity.

8.3.2 The parallels of cheating and cybercrime

Cheating in games has raised concerns among law enforcement agencies regarding its possible role in familiarising certain young individuals with cybercrime through exposure to relevant technical practices (CREST 2015; FPA 2022). As part of their early intervention strategies to redirect the career paths of potential perpetrators, they began investigating the structural circumstances associated with cybercrime and the gaming industry. Using the findings that surfaced in the empirical chapters of this thesis, we circled back to this claim by applying the Routine Activity Theory well-established in criminology to the domain of game cheating (Cho, Lusthaus, *et al.* 2023). The theory posits that for a crime to occur, three elements must converge in a given time and space: a motivated offender, a suitable target, and the absence of a capable guardian (Fig. 8.2). This theory emphasises the importance of situational factors in determining where and when opportunities for crime arise, making it a suitable model for understanding how cheating emerges in games, as both contexts depend on environmental conditions that enable rule-breaking behaviour.

Using secondary data analysis and a systematic literature review, we identified conceptual, social, and technical elements that parallel cybercrime. By employing

Figure 8.2: Application of Routine Activity Theory to crime. Adapted from Choo (2011).

the theoretical framework, we were able to specify the following elements: 1) advancement, curiosity, resentment, and anonymity as motivations for cheaters, 2) limited anti-cheating measures and legal intervention as indicators of lack of guardianship, and 3) in-game opponents, vulnerable systems, and high-reward games as suitable targets. These findings enabled us to identify the key parallels, namely the pursuit of victory, exploration of integrity, deployment processes, social immersion, familiarisation with domain knowledge, and anonymity. This observation ultimately suggests that both individual and communal perspectives shape how players understand and engage with these behaviours.

Following the findings, we discussed how certain cheaters may inadvertently become involved in cybercriminal activities, such as distributing malicious software or participating in DDoS operations, as part of their broader cheating objectives. Exposure to these environments can desensitise individuals to cybercrime, especially when such activities are positioned as desirable forms of advancement within cheating communities. In pursuit of this advancement, some players may engage in cybercriminal practices, which they may not fully recognise as such or, even if aware, may find it difficult to withdraw due to increasing reliance on the associated financial or social benefits.

We also observed how security-related activities such as discovering vulnerabilities and developing evasive techniques are increasingly gamified within cheating communities, blurring the line between gameplay and cybercrime. These dynamics

warrant further investigation and highlight the importance of cyber security education and awareness as a means of equipping individuals with the skills necessary to recognise and resist involvement in illicit or harmful online activities, particularly given the large youth population engaged in gaming (Przybylski & Weinstein 2017).

8.4 Reflections on the Methodology

The methodologies employed in this research have certain limitations that should be taken into account when interpreting the findings and planning future work. In the following, we first discuss the choice of the theories and then outline the main limitations and challenges encountered.

8.4.1 Choice of the theories

This thesis provides a comprehensive perspective on cheating through the interdisciplinary application of GameFlow criteria, participatory culture, and governance theories. The GameFlow criteria illuminate the in-game factors that shape an individual's propensity to cheat, while the perspective of participatory culture reveals how community interactions, shared values, and group dynamics can perpetuate cheating by fostering specific affordances. This approach provides valuable insight into how collective practices within certain social environments serve to legitimise cheating. The governance theory further informs our understanding by demonstrating how the presence or absence of a code of conduct and its enforcement shapes normative standards and sustains the ongoing functioning of cheating communities. By integrating these theoretical perspectives, this thesis moves beyond the explanations confined to social norms or in-game mechanics, highlighting the complexity of cheating as a broader phenomenon. The findings underscore the value of applying interdisciplinary theories, as we demonstrate that cheating cannot be fully understood or addressed from a single perspective and that a multifaceted angle is needed to grasp its nuances.

8.4.2 Limitations

Population sampling

As surfaced in the findings, many social groups associated with cheating are inaccessible or obscured to outsiders. This presents significant challenges for researchers in identifying groups that are most relevant and appropriate for designing data collection. In Chapter 4, we had initially intended to include a broader range of game genres in the data collection. However, we encountered unforeseen challenges in accessing the target population, as our interview advertisements either failed to reach the wider user base or were restricted by policy, leading to high discrepancies in participation rates across game genres.

As a result, we primarily focused on games that had the highest response rate, subsequently excluding other game genres from the analysis. Once the initial round of data collection and analysis was done, we reached out individually to other game genres and used their insights to evaluate the findings (see Section 4.3.1). To gain insights about the private groups, we drew on our existing participant network and identified key individuals with access or relevant knowledge based on their observations of these groups. We also incorporated data from video and advertisement observations which provided additional insights into these populations.

Generalisability

Our studies are specific to two games, *CS:GO* and *GTA V Online*, which have some of the largest game cheating communities as of 2022. The lack of a suitable alternative community that is comparable to the two makes it challenging to confirm their generalisability across different games. This issue also extends to the selection of the platform used for participant recruitment, potentially raising questions about the applicability of the findings to other platforms. Given the limited body of prior research in this field, our recruitment efforts were initially bound by general public information available as a starting point. While this introduces limitations in capturing the full spectrum of perspectives and experiences

present across different online platforms, we argue that the significantly large user base and low barriers to entry on Reddit, the primary source for accessing participants, make it a valuable platform for reaching a challenging and specialised community such as that of game cheating. To enhance the representativeness of the sample, we targeted participants from diverse geographic locations and gaming experiences (see Appendix A). Following initial analyses, we engaged in follow-up discussions with several participants to facilitate triangulation, thereby strengthening the reliability of the data. Moreover, we incorporated expert reviews of our findings, which offered external validation and grounded the results within a more representative context (Breitmayer *et al.* 1993).

Subjectivity

One of the criticisms of the constructivist approach to research is that the assumed reality is not necessarily 'out there' waiting to be discovered but rather constructed in the minds of the observer (Guba & Lincoln 1989; Kushner 1996). The constructivist research thus risks drawing subjective conclusions (Ritchie & Lewis 2003). To address this limitation, we broadened our sample to include a variety of game genres and used iterative triangulation to improve the objectivity and robustness of our findings.

Sampling size

Sample size is often a subject of discussion in qualitative research due to its inherent limitations. Unlike quantitative research, which usually prioritises large-scale data collection, our approach centres on in-depth exploration and contextual understanding of individual experiences. This underscores the importance of allocating significant resources and time to uncovering underlying narratives and capturing the complexities commonly overlooked in quantitative measures. In this context, the concept of information power serves as a qualitative analogue to sample size, emphasising that the value of qualitative research lies less in the number of participants and more in the richness and relevance of the information they provide (Malterud *et al.* 2016). The standard criteria for determining an adequate number of participants include the aim of the study, sample specificity, and the quality of

dialogue. By prioritising the information power of an appropriately selected sample, we consider our sample size to be well-suited to the scope of this thesis.

Quality of the data

We are conscious of how social desirability would have influenced bias in the responses obtained during the interviews, as participants may have been inclined to present themselves differently from their actual engagement. To address these differences, the author employed probing techniques and open-ended questions to encourage participants to provide detailed accounts with examples, allowing for a more accurate understanding of their actual involvement online. From the beginning, we clarified that the research is a genuine academic pursuit into cheating, seeking to understand experiences as they are, without passing normative judgement on their activities.

8.4.3 Researcher well-being

In the context of research design, the well-being of the researcher is often a neglected consideration, despite its influence on many aspects of the methodology and shaping the outcome of a study. Before and during the data collection phase of the studies, there were instances that prompted reflection on the adequacy of the safety provisions embedded in the research design with respect to the well-being of the researcher conducting the data collection. Key concerns were identified as follows:

1. **Trolls**: Given that interview participants were recruited online from various communities, the researcher was susceptible to being targeted by online trolls, with four such incidents occurring between 2020 and 2021. Trolls, in this context, are users who engage in inflammatory or disruptive activities to provoke negative reactions (Thacker & Mark D. Griffiths 2012). In these instances, the researcher blocked the trolls on relevant platforms, as well as from any other channels through which direct contact might occur.
2. **Cyber security threats**: The community that is the focus of this research is known for engaging in hacking and doxxing for a variety of reasons. Due to the reputation of the affiliated academic institution, a considerable number

of onlookers were drawn to the interview recruitment, many expressing a mixture of intrigue and distrust about its legitimacy. Given this atmosphere of doubt and the potential for ridicule, it was conceivable that the researcher might encounter similar threats present within the community. To address the risks, the researcher sought advice from the Chief Information Security Officer of their academic institution. Among others, the following actions mainly involved sanitising all unnecessary social media accounts and posts, enabling multi-factor authentication across all possible social media accounts being used for the scope of this research, and saving additional backup codes offline. The researcher continued to maintain close contact with the university's security team for the latest inputs on protecting online resources.

3. **Identity-based attacks**: The gender of the researcher also made them more susceptible to being targeted by members of the predominantly male community. As previous research has shown, being identified as a female in gaming environments can increase visibility and the likelihood of unwanted attention, regardless of one's role (Fox & Tang 2014; Fox & Tang 2017; Beres *et al.* 2021; Paaßen *et al.* 2017; Gabbiadini *et al.* 2016; Madden *et al.* 2021). In this context, occupying the position of a researcher may have further amplified this effect by prompting increased curiosity. To ensure greater safety, the researcher refrained from answering personally intrusive questions from participants. This also involved not actively verifying the identity of the individual behind the social media account used for interview and recruitment purposes, as participants were not informed which of the three researchers, including the two male supervisors, was conducting the interviews. If unpleasant or provoking comments grew worse during or after an interview, the participant's account was blocked as a way to abort communication. The responses mirrored those adopted by female gamers when facing toxic behaviours in games—such as gender masking, seeking help, and avoidance—as documented in Fox and Tang's work (2017).

Despite premeditated measures to mitigate anticipated risks, the researcher encountered three instances of subtle suggestive remarks and one direct gender-related comment during the interviews, all of which were unrelated to the content of the interviews. Further, the research profile on one of the public social platforms initially used for participant recruitment was once compromised, with attempts made to defame the research project by posting pornographic images and texts. The researcher also experienced two instances of unsolicited invitations to a Discord channel, where their research account username was persistently tagged with overtly ridiculing texts over several days.

These events underscore the reality that researchers themselves are not exempt from the types of threats that pervade cheating communities, making it especially important to maintain clear boundaries between academic researchers and participant subjects (see Section 8.3.1). They also surface the importance of researchers being well-informed about the potential risks they may encounter, and implementing effective mitigation strategies (Stein & Appel 2021; Doerfler *et al.* 2021; Allison 2020). These preceding events inspired the author to collaborate with colleagues in the gaming field to convene a workshop aimed at sharing similar experiences and discussing potential actions for addressing such challenges (Boldi *et al.* 2023; Boldi *et al.* 2025). Drawing on the unique challenges of engaging with the gaming population, the workshop focused on brainstorming strategies to navigate risks and ensure researcher safety, representing a meaningful step forward for future research.

8.5 Directions for Future Work

This thesis combines multiple fields of scholarship to explore cheating communities, setting the stage for future research in various industries. The following section delves into these potential directions.

8.5.1 CSCW scholarship: Delving deeper into the ethical considerations for platform design

This research draws attention to the broader risks that can emerge when everyday community practices on one platform, such as interest-based social interaction, influence user experiences in other online environments as games. Among the various harms associated with cheating, cyber threats have received comparatively little attention. Our empirical findings indicate that within cheating communities, vulnerable users frequently encounter online threats—a reality that is obscured from those outside these spaces due to the stigma associated with cheating. As a result, naïve and less experienced players are often left without institutional support or clear guidance, increasing their exposure to harmful behaviours. Although toxic interactions are well documented in competitive gaming, what sets this context apart is the lack of effective oversight and structured moderation.

Addressing these social issues requires equipping players with actionable knowledge to safeguard themselves in online environments, such as deploying explicit awareness campaigns and implementing stricter moderation mechanisms. These measures should be delivered through collaboration between platforms and game companies to mitigate the negative impacts of cheating and foster a positive social gaming environment (ADL & FPA 2020a; Seering 2019).

Platforms ought to consider the wider effects of cheating, looking beyond individual games to how such activities can lead to more disruptive behaviour throughout their ecosystems. By examining these patterns, platforms may recognise that certain aspects of cheating are closely associated with behaviours they already prohibit or discourage, such as harassment (Seering, R. Kraut, *et al.* 2017; Rieger *et al.* 2021), and use this as a basis for developing strategies against such negative conduct. One specific area that warrants attention is toxic behaviour, especially considering the young demographic that constitutes a substantial segment of the gaming population (Przybylski & Weinstein 2017).

It is also valuable to establish a shared language for identifying disruptive behaviours within the community, moving beyond game-specific concepts such

as fairness, whose interpretation can differ significantly among stakeholders. A player may justify cheating on the grounds of perceived developer negligence, while still maintaining an appreciation for the gaming industry as a whole (V. Chen & Ong 2018). This suggests that if players demonstrate a genuine willingness to engage in constructive discussions about both gaming and cheating, they may in fact be well positioned to align with the platform's goals, contrary to the view that they are inherently opposed to the industry. Furthermore, platforms should consider formulating moderation guidelines that are specific to individual games or genres, rather than adopting a generic one-size-fits-all approach. In particular, these platforms may factor in games with strong anti-cheating measures when determining the types of gaming communities that are allowed to form or operate with less scrutiny. This approach can ensure a more nuanced approach to managing the communities associated with controversies on other platforms.

8.5.2 Gaming industry: Alternative anti-cheating strategies

Our research aligns with the emerging perspective that advocates for alternative approaches to conceptualising cheating, and emphasises the importance of fostering a more constructive relationship between game companies and players (L. Wang *et al.* 2019; Callele *et al.* 2008). In examining permanent bans on gaming platforms, Kou (2021) observed that many contemporary anti-cheating measures reflect a prevailing tendency to regard cheaters as participants who are fundamentally untrustworthy. Following this, rather than leaving players without opportunities for growth, Kou points out the value of adopting a "restorative justice" perspective to better reflect the needs of both victims and the offenders, thereby fostering more harmonious integration within the gaming platform. This idea is consistent with our findings that individuals who engage in cheating behaviours are often motivated by the pursuit of positive play experience, characterised by greater immersion and replayability value. Future research could focus on these dimensions to identify strategies that are mutually beneficial for both users and game companies, such

as enhancing user research and implementing one-to-one reporting mechanisms to better understand players' pain points in games.

Moreover, our studies have uncovered how cheating communities can drive innovative changes that cater to their unique desires and needs, striving for more "creative capacities" (Dibbell 2007). This perspective challenges traditional notions of cheating as solely a disruptive behaviour, urging a reconsideration of the potential positive contributions these communities offer to the gaming ecosystem. Their contributions could range from amplifying replayability to generating innovative spin-off products that extend the longevity of the game, similar to the cheat codes released by developers in the 1990s (Consalvo 2007; D. Cook 2012). Future scholars can analyse how the gaming industry can harness the innovative dimensions of cheating communities for further growth (Thiel & Lyle 2019; D. Lee, Lin, *et al.* 2020), such as creating dedicated spaces for competition among players with such tools (Ricochet 2022). Some existing examples include the '2b2t' server in *Minecraft*, which is known for its play mode with no rules, and *CS:GO*'s HvH servers that cater to those who enjoy exploiting underlying game mechanics. By formally embracing such platforms, game companies can deliver a balanced experience while also gaining a direct understanding of player behaviours, which would enable them to better align their games with players' needs and expectations. Introducing assistive in-game tools can be especially helpful for disabled, young, or novice players whose capabilities differ from average adult players, as they could use them as alternatives to traditional gaming methods. A broader conversation in the gaming industry is thus needed, focusing on how they can enhance gameplay and accessibility for a wider range of players (Power *et al.* 2023).

8.5.3 Cyber security industry: Leveraging games for a cyber security mindset

The concepts from our discussion regarding cyber security and cybercrime in Section 8.3.2 point to the relevance of the attack and defence dynamic commonly observed in cyber security events within the context of cheating. In particular,

the various social and technical elements involved in cheating signify the potential opportunity in familiarising a cheater with a mindset that is particularly relevant to the cyber security industry. Our analysis reveals notable parallels in the motivations and justifications associated with cheating, and demonstrates how individuals are exposed to environments where such behaviour is not only tolerated but actively encouraged as a means of navigating challenges and overcoming obstacles. This dynamic holds promising implications if channelled constructively.

Zimmermann and Renaud (2019) explored the concept of the "differently" mindset, which recognises the capacity of well-intentioned individuals to be "part of the solution" rather than the problem in the field of cyber security. Based on these aspects, cyber security companies can consider early game players interested in cheating as potential talents in cyber security. Gamification is already a popular approach in the field of HCI to aid user learning and engagement, and there already exist games that seek to teach real-world problem-solving skills related to cyber security (e.g., *ThreatGEN®: Red vs. Blue*[1] (2019) and *CyberSprinters*[2] (2023)). By gamifying alternative forms of resource acquisition that align with online gaming, companies can leverage the transferable skills developed through game cheating to support prosocial initiatives. This would also contribute to the persistent problem of cyber security skills shortage by helping identify and recruit such talents for the industry (Caldwell 2013). Providing this alternative space can potentially re-navigate the motivations the cheaters have in games to different avenues that could be mutually beneficial to all parties, and induce more innovation in the industry.

8.5.4 Law enforcement: A longitudinal approach to identifying criminal activity

Our thesis lays a stepping stone for better understanding the possible pathways between game cheating and cybercrime by shedding light on the social aspects interweaved with cheating beyond game platforms (NCCU 2017; FPA 2022; CREST

[1] An online multiplayer strategy game where players compete against computer AI or live opponents in head-to-head matches by attacking and defending computer networks.

[2] An educational game launched by the UK National Cyber Security Centre to teach children aged 7 to 11 how to stay secure online.

2015). One recommendation building on the findings is to conduct longitudinal research to capture the trajectory of the users from their initial engagement with cheating communities to their subsequent deeper involvement in multi-interest communities, as surfaced in the expert feedback in Section 7.5. This would allow us to gain a richer understanding of real-world scenarios in which individuals first encounter cybercriminal aspects and then expand their activities beyond the realm of gaming. It was stated earlier in Chapter 3 that online ethnography is not suitable in domains that are challenging to access from the outset. Now that we have identified the areas which are and are not easily accessible, and provided a case for how a researcher could become directly involved to access more samples, one avenue for further investigation is how the social dynamics manifest within highly selective and vetted groups. Gaining insights into the values upheld by these collectives presents an opportunity to develop a more nuanced understanding of exclusive groups over time. This approach would offer valuable perspectives on the evolving motivations and skill sets of individuals who are particularly inclined to participate actively in underground forums.

9 Conclusion

This thesis arose from the need to understand the social dynamics shaping players' opportunities and choices related to cheating in games, a phenomenon prevalent in industry reports but largely uncharted in academia. To establish a foundational understanding in this field, we conducted exploratory research into the social practices and underlying structures within communities focused on game cheating. Using established theories—flow theory, participatory culture, and governance theory—our studies facilitated inquiries that allowed us to discover emergent concepts associated with social dynamics and validate theoretical elements.

First, we demonstrated how within games, social dynamics—such as competition, cooperation, and camaraderie—arise among cheaters, highlighting how these interactions are fundamental to the play experience of games. Second, we built upon these insights to investigate the distinct aspects of cheating communities that operate outside the games themselves. We discovered a range of participatory activities within the communities, varying in legality and playfulness, and identified platforms that provide a secure environment for enhancing cheating experiences. This study highlighted roles associated with activities that may be considered more harmful to the broader online ecosystem, taking into account their impact on game providers and the types of users who interact with them. Third, we explored the governance of cheating communities, examining the dynamics of power within

themselves, and the elements that promote peer relationships and the integration of newcomers. This investigation highlighted the mechanisms akin to those in other online communities previously analysed but also shed light on the prevalent gatekeeping and harmful behaviours towards vulnerable users that have remained largely unreported outside of these communities.

Finally, we integrated the preceding data with existing literature to develop a conceptual framework that offers an overview of the types of social collectives, from peer groups to multi-interest communities, within the broader context of cheating. This framework highlights the motivations for joining these collectives, individual practices, and governing mechanisms. We discussed the multifaceted nature of these collectives, demonstrating that they are more than mere spaces for violating game rules and contain layers of complexity that warrant explicit attention. By outlining these components, we highlighted areas requiring further investigation, including toxic behaviours, the involvement of cheat developers and sellers, and a significant lack of ethical and moral awareness among users in their practices. To address these areas, we proposed potential intervention strategies and subsequently reflected on the responsibility of the industry in implementing these measures. We finalised our discussion with a call for a collaborative approach among various industries—mainly social media companies, game developers, and law enforcement agencies—to address the highlighted concerns and foster a safer online environment for users.

This thesis serves as a foundation for understanding one of the most prevalent examples of technological misuse, and stands as a reminder of the potential repercussions that can arise when real-world practices are overshadowed by normative or dismissive perspectives. While seemingly peripheral within the broad scope of the gaming industry, examining these communities is invaluable as they provide insights into the modern subcultures born from the intersection of socio-cultural dynamics and adoption of technology. We hope this research serves as a catalyst for further academic research, generating interest in partnerships across different sectors, and inspiring future scholars to build upon these findings.

A

Supplementary Material: Chapter 4–6 Sample Overview

Contents

A.1 Participant Demographic Information

Table A.1 below shows the participant demographic information by gender, geographic location, working status, game of interest, experience in cheating in other games (*Other games*), and roles (*Moderator*, *Developer*, or *Miscellaneous*). The *Miscellaneous* role refers to individuals who have served as developers, beta testers, vendors, or content creators, either in the past or at present. Note that, even if a user does not take on any formal roles, they may still be well-known within a community. *NB* means non-binary, and *n/a* means the participant chose not to answer or failed to be contacted for the background survey. Geographic location is presented according to participants' responses, whether by country or region. The data were treated as blank unless participants specifically confirmed them or provided relevant examples.

Participant	Gender	Location	Status	Game	Other games	Roles		
						Moderator?	Developer?	Miscellaneous
U1	male	Austria	Student	*CS:GO*	-	-	-	-
U2	male	USA	Student	*CS:GO*	-	-	✓	-
U3	male	USA	Student	*CS:GO*	✓	-	-	-
U4	male	n/a	n/a	*CS:GO*	-	-	-	-
U5	NB	USA	Employed	*CS:GO*	✓	-	-	-
U6	n/a	n/a	n/a	*CS:GO*	-	✓	-	-
U7	male	UAE	Both	*CS:GO*	-	-	-	-
U8	male	Latvia	Student	*CS:GO*	-	-	-	-
U9	male	n/a	Student	*CS:GO*	-	-	-	✓
U10	male	Slovakia	Student	*CS:GO*	-	-	-	✓
U11	male	Romania	Student	*CS:GO*	-	✓	✓	-
U12	male	USA	Student	*CS:GO*	-	✓	-	-
U13	male	Romania	Both	*CS:GO*	-	✓	✓	-
U14	male	Romania	Student	*CS:GO*	✓	-	-	-
U15	male	UK	Employed	*CS:GO*	-	-	✓	-
U16	male	Malaysia	Student	*CS:GO*	✓	✓	✓	-
U17	male	USA	Student	*CS:GO*	✓	✓	✓	-
U18	male	Canada	Employed	*CS:GO*	✓	-	-	✓
U19	male	Italy	Student	*CS:GO*	-	-	-	-
U20	male	UK	Employed	*CS:GO*	✓	✓	-	-
U21	male	Brazil	Student	*CS:GO*	-	-	-	-
U22	male	UK	Employed	*CS:GO*	✓	-	-	-
U23	male	Russia	Employed	*CS:GO*	-	✓	✓	✓
U24	male	Kazakhstan	Employed	*CS:GO*	-	✓	-	-
U25	male	Israel	Student	*CS:GO*	✓	-	-	✓

U26	male	Romania	Both	*CS:GO*	-	-	-	-
U27	male	Germany	Student	*CS:GO*	✓	-	-	✓
U28	male	UK	Student	*CS:GO*	-	-	✓	-
U29	male	Lithuania	Student	*CS:GO*	✓	-	-	✓
U30	male	Germany	Student	*CS:GO*	-	✓	✓	✓
U31	male	Canada	Both	*CS:GO*	-	-	-	-
U32	male	Sweden	Both	*CS:GO*	✓	-	-	✓
U33	male	USA	Both	*CS:GO*	-	-	-	-
U34	male	USA	Neither	*CS:GO*	✓	✓	-	-
U35	male	n/a	Student	*CS:GO*	✓	✓	-	-
U36	male	SE Asia	Employed	*CS:GO*	-	-	-	-
U37	male	Australia	Student	*CS:GO*	✓	-	-	-
U38	male	USA	Employed	*CS:GO*	✓	✓	✓	-
U39	male	USA	Student	*CS:GO*	✓	✓	✓	✓
U40	male	Portugal	Both	*CS:GO*	-	-	-	-
U41	male	EU	Student	*GTA V*	✓	-	-	-
U42	n/a	UK	Student	*GTA V*	-	-	-	-
U43	male	USA	Employed	*GTA V*	✓	-	✓	-
U44	male	Netherlands	Student	*GTA V*	-	-	-	-
U45	male	USA	Employed	*GTA V*	✓	-	-	-
U46	male	Argentina	Student	*GTA V*	-	✓	-	-
U47	n/a	Hungary	Student	*GTA V*	-	✓	-	-
U48	male	UK	Unemployed	*GTA V*	✓	-	✓	-
U49	male	Vietnam	Student	*GTA V*	✓	-	-	-
U50	male	n/a	Student	*GTA V*	-	-	-	-
U51	n/a	n/a	n/a	*GTA V*	-	-	-	-
U52	n/a	USA	Employed	*GTA V*	-	-	-	-
U53	male	USA	Employed	*GTA V*	-	-	-	-
U54	n/a	Canada	Student	*GTA V*	-	-	-	-
U55	n/a	n/a	n/a	*GTA V*	-	-	-	-

U56	n/a	India	Student	*GTA V*	-	-	-	-
U57	male	n/a	Employed	*GTA V*	-	-	-	-
U58	male	USA	Student	*GTA V*	✓	-	-	-
U59	male	Brazil	Both	*GTA V*	✓	-	-	-
U60	male	USA	Unemployed	*GTA V*	-	-	-	-
U61	male	USA	Employed	*GTA V*	-	-	-	-
U62	male	Canada	Both	*GTA V*	✓	-	-	-
U63	male	Australia	Both	*GTA V*	-	-	-	-
U64	male	USA	Student	*GTA V*	-	-	-	-
U65	n/a	n/a	n/a	*GTA V*	-	-	-	-
U66	n/a	n/a	n/a	*GTA V*	-	-	-	-
U67	male	n/a	n/a	*Dark Souls 3*	✓	✓	✓	-
U68	male	USA	Employed	*WoW*	✓	-	-	-
U69	male	USA	Employed	Garry's Mod CS:GO	✓	✓	-	-
U70	male	Germany	Student	*Dota 2*	-	✓	-	-

Table A.1: Participant demographics by gender, geographic location, employment status, game of interest, experience with cheating in other games, and association with specific roles. *Miscellaneous* roles refer to participants who have served as developers, beta testers, vendors, or content creators.

A.2 Ethics Approval

Departmental Research Ethics Committee
ethics@cs.ox.ac.uk
Chair: Professor Andrew Martin
Secretary: Katherine Fletcher

DEPARTMENT OF
COMPUTER
SCIENCE

9 September 2020

Selina Cho
Department of Computer Science

Dear Ms Cho,

Research Ethics Approval

Ref No: SSD/CUREC1A CS_C1A_20_017

Title: Self-governing communities in online game cheating

The above application has been considered on by the Computer Science Departmental Research Ethics Committee (DREC), on behalf of the Social Sciences and Humanities Inter-divisional Research Ethics Committee (IDREC) in accordance with the procedures laid down by the University for ethical approval of all research involving human participants.

I am pleased to inform you that, on the basis of the information provided to the DREC, the proposed research has been judged as meeting appropriate ethical standards, and accordingly approval has been granted.

Should there be any subsequent changes to the project, which raise ethical issues not covered in the original application, you should submit details to the DREC for consideration.

Yours sincerely,

Katherine Fletcher
Administrator, Computer Science DREC

SOCIAL SCIENCES & HUMANITIES
INTERDIVISIONAL RESEARCH ETHICS COMMITTEE

Research Governance, Ethics & Assurance Team, Research Services, University of Oxford,
Boundary Brook House, Churchill Drive, Headington, Oxford OX3 7GB, UK
Tel: +44(0)1865 289881 Email: ethics@socsci.ox.ac.uk

Selina Cho
Department of Computer Science
University of Oxford

28 July 2022

Dear Selina,

Research ethics approval

Research title: Exploring Governance in Game Cheating Communities

Research ethics reference: R77226/RE001

The above application has been considered by the Social Sciences and Humanities Interdivisional Research Ethics Committee (SSH IDREC) in accordance with the Universit
approval of all research involving human participants.

I am pleased to confirm that, on the basis of the information provided to the IDREC, ethics approval has now been granted for this study.

Please note the following:

Personal data: It is the responsibility of the PI to ensure that all personal data collected during the project is managed in accordance with the University's guidance and legal requirements.

In-person activities: Any data collection involving in-person interactions with participants must have an up-to-date fieldwork risk assessment in place; further guidance is available from the Safety website.

Amendments: Please notify the committee if you intend to make any amendments to the information in your ethics application as submitted at date of this approval, as all changes must receive ethical approval prior to implementation. The amendment form is available on the SSH IDREC webpage.

Adverse events: The SSH IDRECs must be notified within seven days of any unexpected adverse consequences to the research participants, researchers or other people involved in this research project.

Audit: The SSH IDREC audits a sample of projects each year to enable the Committee to monitor the ethical aspects of research in progress.

We welcome feedback on your experience of the ethical review process and suggestions for improvement. Please email any comments to ethics@socsci.ox.ac.uk.

Yours sincerely

DocuSigned by:
Jacqueline Carty
E3D803B14AC74BE...

Jacqueline Carty
Research Ethics Administrator

for

Jennifer Blaikie
Research Ethics Manager (SSH IDREC)

cc: Ivan Flechais, Jonathan Lusthaus

B

Supplementary Material: Pilot Study

Contents

B.1 Introduction

Prior to undertaking this thesis, a pilot study was conducted to explore the prevailing social norms and values associated with game cheating and to assess the feasibility of sampling within this context. The study aimed to identify behaviours considered unacceptable by players, and to examine how these behaviours align with the formal rules and norms established by game companies. To achieve this, the research focused on players' first-hand experiences, providing insight into the normative perceptions

surrounding cheating. The study also examined user responses to instances of cheating, highlighting the practical measures adopted by players in response to behaviours they perceived as harmful. Participants included both individuals who had and had not engaged in cheating themselves. For the selection of games, we focused on competitive multiplayer games, as this category featured the highest prevalence of both commercial and freely available cheats at the time. Drawing on individual narratives of cheating, the study aimed to address the following questions:

1. How is the act of cheating characterised within the gaming environment?
2. Through what avenues do players acquire knowledge and exposure to game cheating?

The questions were chosen to offer insights into the diverse perspectives and understanding of cheating held by individuals with experience in playing games. Despite certain limitations in the method and sample used, the results yielded valuable insights into specific domains of cheating that deserve further academic investigation.

B.2 Methodology

The study adopted a qualitative approach based on semi-structured interviews. Participants were recruited individually through snowball sampling, starting with existing contacts. The inclusion criteria for the interviews were participants over the age of 18, who speak English, and with experience playing competitive online games. Before the interviews, participants were provided with an information sheet outlining the study and gave their consent to be recorded. Interviews were conducted either in person at the interviewer's office or a public cafe, or online via text or voice on Discord.

Table 2 below presents the user profiles of study participants, including their nationality, game title, age at the time of the interview, age when they first started playing the game, and current playing status. The details are listed in alphabetical order according to participants' nationalities.

The interviews were conducted from May to June 2019 and lasted between 30 minutes and one hour. Participants were aged 19 to 27, and although the

P	Nationality	Game	Age	Starting Age	Still Play?
1	Australia	League of Legends	19	13	Yes
2	China	World of Warcraft	26	12	Yes
3	China	Diablo	24	12	Yes
4	France	World of Warcraft	27	14	No
5	Germany	Call of Duty & CS:GO	27	15	Yes
6	S Korea	Starcraft	27	11	Yes
7	S Korea	League of Legends	26	17	No
8	Turkey	World of Warcraft & League of Legends	26	16	Yes
9	U.K.	CS:GO	23	14	Yes
10	U.K.	Dota 2	23	13	Yes
11	USA	Diablo & Yu-Gi-Oh	25	12	Yes
12	USA	Final Fantasy XIV	25	12	Yes

Table B.1: Participant demographics for the pilot study.

study had no gender-specific criteria, all participants were male. Three participants were interviewed on Discord (two via voice and one via text) while the remaining interviews were conducted in person. Two of the participants no longer played the game on a regular basis.

The interview consisted of three parts: 1) how the participant first began playing the game, 2) obstacles encountered in quests and challenges, and 3) experiences with cheating or witnessing cheating. Participants were invited to share any experiences they may have had with cheating, in order to help guide the direction of subsequent questions. The interviewer deliberately refrained from specifying which acts or tools constituted cheating, instead allowing participants to define and explain these concepts in their own terms. For those with experience in cheating, follow-up questions explored relevant scenarios in greater depth. Participants were encouraged to bring a computer device to serve as a visual aid during or following the interviews.

This study was carried out with institutional approval and with consideration for participant protection (ref. num.: SSD/CUREC1A CS_C1A_19_011).

B.3 Findings

The interview findings centred on two primary themes: participants' social experiences and their perceptions of the average cheater.

B.3.1 How is the act of cheating characterised within the gaming environment?

In defining what constitutes cheating for the players, there was a recurring concept of advantage and 'doing the impossible'. P5 distinguished between two forms of cheating, both of which were referenced by other participants during the interviews:

- Engaging in activities that enable users to perform actions not ordinarily possible, such as moving at increased speeds, acquiring more in-game currency than permitted, or accessing restricted areas, and
- Exploiting game mechanics and bugs to take advantage of technical flaws or unintended features not anticipated by the developers.

Regarding the latter aspect, P6 added that "glitches are initially mistakes however [...] sometimes those glitches are left in the game intentionally, since it benefits players, online games usually patch out glitches". Similarly, P8 made a claim that a good player must know the hidden aspects of the game: "If you had some knowledge of the game, depending on the map and player, you would know that hitboxes don't move with the graphics of the player. You would know you would have to shoot in front or behind in order to shoot the hitbox and kill the other player. I'm not sure if that's considered cheating or knowing how to play the game". Some games, such as *CS:GO*, offer players an option to monitor others playing as a third-party spectator, which allows them to observe other players' strategies and possibly cheating: "You can see that someone is staring at someone's silhouette through the wall. It's highly unlikely that they just happened to be coindentally standing there [...]. But someone *can* genuinely be that good sometimes. It's hard to tell" (P5).

A general consensus emerged that cheaters are seen as disruptors of the game environment who can be categorised into two types of players: 1) script kiddies, who are unskilled users downloading cheats without an understanding of its inner-workings, and 2) proficient programmers, who are skilled in both gaming and cheating, aiming to rank up through unconventional means. Participants perceived script kiddies to be common and regarded them as lacking the basic gaming skills necessary to succeed without resorting to cheats. P1 explained, "in RPGs, you collaborate mostly, if one of the players cheats to level up, it means that they are not good enough to level up as a normal player. So if you collaborate with this player, you will also have lower skills", suggesting how others would try to avoid such players. Cheat tools are predominantly used to elevate one's rank in a game, influencing how a user is perceived by others and determining their eligibility to play: "[The cheaters] are focusing on what rank they appear to other people and what other people think of them [...]. They'd rather have a good reputation even it they would fake their way there" (P5).

The second view involves skilled programmers who actively develop cheat scripts and distribute them to others. These users may not aim to achieve common game goals but pursue alternative objectives, such as financial compensation or reputation within the game: "people who want to learn how to break the game, maybe for them it's a different kind of challenge—maybe for them learning how to break is a challenge on itself" (P5). Four participants agreed that achieving proficiency as a cheater requires substantial proficiency and skill, particularly in understanding game server mechanics and programming. They claimed that, given the considerable learning curve involved, the majority of users attempting to cheat are likely to fall into the category of script kiddies.

Further, users who seek cheating tools hold varying perceptions and derive distinct benefits from their experiences in games. P11 claimed that "some people just go the extra mile to cheat", as in some are naturally more inclined to devote more effort and time to pursue the unconventional paths, and that for some fair players, this devotion is not worth it: "one has to care enough to cheat". This

suggests that users who cheat are often motivated by incentives absent from the original games, such as the opportunity to gain profit through virtual currencies. In response to the likely presence of cheaters, ten participants shared how they dealt with the situation by ignoring, muting, or reporting them to the developers. Some participants questioned the legitimacy of the reporting mechanism, feeling that automated algorithms were prioritised over manually submitted abuse reports, resulting in a lack of trust in gaming companies. They also described directly confronting suspected cheaters and requesting that they leave the game.

B.3.2 Through what avenues do players acquire knowledge and exposure to game cheating?

While only three participants acknowledged experience with cheating, all were aware of the pervasive cheating capabilities inherent in the games they play and elaborated on their effectiveness throughout the interview. Participants that had discussed personal cheating experiences ensured to clarify that they are no longer engaged. It was suggested from the responses that unintentional cheating does not count as real cheating because the user did not intend to harm anyone and was not aware of the significance of the act. P3 claimed that the older they got, they were cheating less because they found it "less fun" to rely on external tools. P2 recounted an episode where they initially opted to acquire in-game points by purchasing on an external website. After several interactions, they discovered not only that they had been scammed by the seller but also that they were subsequently banned from participating in the games, likely as a result of detection. They elaborated on how they initially became involved:

> "I first looked up on [the] internet—how to improve my car. I saw the markets [were] already sell[ing] points with cash. I thought it was legal in the beginning [...] that person who I am talking to was an actual human being. [Though] I can only talk to him on the screen, I thought it was legal. But when I paid him, and he didn't give me the points, my account got blocked. I think the gaming company found out that I have been active in, let's say, a scene. And it was blocked because I was acting that way to receive the points illegally" (P2).

The participants, who were actively playing games at the time of the interview, were all familiar with the automated cheating tools available for the games they played. During the interview, participants appeared cautious about admitting whether they had cheated themselves, despite being aware that the research focused on cheating and the neutral, non-accusatory phrasing of the questions. They frequently expressed uncertainty regarding the legitimacy of the tools they used or observed in the game, such as "a form of indirect cheating", "not sure if that is considered cheating", and "but that was common at the time". This is likely due to the social stigma associated with cheating where even the term itself carries negative connotations, making people uncomfortable with openly discussing these experiences in any context. The following responses support the view that typical, non-cheating players prefer not to be associated with cheating. P12 responded to a direct inquiry about whether they had modified games:

> "Yes unfortunately. One of my favorite games of all times, Gunz: the Duel had one of the WORST hacking problems for a game and oof the whole game play mechanics of that game ended up being more popular because of bugs in the coding though. But there were people with wall hacks (seeing/moving through walls when normally you couldn't), lanwmower hacks (basically melee-massive stun/dmg), godmode (not taking dmg or dying)...but yes, ultimately hacking led to its downfall (that is, unless everyone is hacking as well and that on its own become a type of a competition..)" (P12).

P12 reported making modifications related to glitches left by the developers and, while admitting to these changes, justified them by suggesting that others engaged in more serious forms of hacking. This suggests that certain game modifications may be considered acceptable when perceived as less severe than those commonly practiced by the majority.

B.4 Lessons Learned

The interviews provided valuable insights into players' perceptions of cheating in games. These findings corroborated Consalvo's (2007) observations of the widespread presence of script kiddies in game cheating. Moreover, participants tended to downplay their naïve encounters with cheating, emphasising that unintentional instances should not be subjected to the same scrutiny as those involving malicious intent.

The insights derived from this preliminary study were integrated to inform the methodology and design of this thesis. First, we observed that introducing a normative perspective shifted the interview focus towards participants admitting whether they had cheated, which overshadowed the intended neutral examination of their experiences. This implicit pressure to confess may be influenced by the prevailing normative values present within the broader gaming industry. This suggests that to achieve a deeper understanding of the concepts within game cheating, it is important to re-assess the methodology and explicitly incorporate the player-centric view of the activity (K. Rogers *et al.* 2016). Secondly, it is important to note that one's cheating capability might be seen as a point of pride in technical proficiency and gaming skill, potentially leading to hyperbolic responses. Lastly, the difficulty in accessing the cheating population indicates the need for a more targeted and focused approach in future work to obtain more nuanced insights into the cheating experiences.

B.5 Ethics Approval

Departmental Research Ethics Committee
ethics@cs.ox.ac.uk
Chair: Professor Andrew Martin
Secretary: Katherine Fletcher

DEPARTMENT OF
COMPUTER
SCIENCE

24 April 2019

Selina Cho
Department of Computer Science

Dear Selina,

Research Ethics Approval

Ref No: SSD/CUREC1A CS_C1A_19_011

Title: Learning to cheat in online games

The above application has been considered on by the Computer Science Departmental Research Ethics Committee (DREC), on behalf of the Social Sciences and Humanities Inter-divisional Research Ethics Committee (IDREC) in accordance with the procedures laid down by the University for ethical approval of all research involving human participants.

I am pleased to inform you that, on the basis of the information provided to the DREC, the proposed research has been judged as meeting appropriate ethical standards, and accordingly approval has been granted.

Should there be any subsequent changes to the project, which raise ethical issues not covered in the original application, you should submit details to the DREC for consideration.

Yours sincerely,

Katherine Fletcher
Computer Science DREC Secretary

cc: Sharon Lloyd, Computer Science Departmental Administrator
(sharon.lloyd@cs.ox.ac.uk)

References

Abeele, Vero Vanden, Katta Spiel, Lennart Nacke, Daniel Johnson, and Kathrin Gerling (2020). "Development and validation of the player experience inventory: A scale to measure player experiences at the level of functional and psychosocial consequences". In: *International Journal of Human-Computer Studies* 135. URL: https://doi.org/10.1016/j.ijhcs.2019.102370.

Acemoglu, Daron and Simon Johnson (2005). "Unbundling Institutions". In: *Journal of Political Economy* 113.5, pp. 949–995.

Activision Blizzard (Mar. 2021). *Cheating Cheaters: Malware Delivered as Call of Duty Cheats*. Activision Blizzard. URL: https://www.activision.com/cdn/research/cheating_cheaters_final.pdf.

Allison, Kimberley (June 2020). "Navigating negativity in research: Methodological and ethical considerations in the study of antisocial, subversive and toxic online communities and behaviours". In: *Workshop Proceedings of the 14th International AAAI Conference on Web and Social Media*. ICWSM '20. Atlanta, GA (virtual): Association for the Advancement of Artificial Intelligence, pp. 1–8. URL: http://workshop-proceedings.icwsm.org/pdf/2020_11.pdf.

Allison, Kimberley R., Kay Bussey, and Naomi Sweller (Nov. 2019). "'I'm going to hell for laughing at this': Norms, Humour, and the Neutralisation of Aggression in Online Communities". In: *Proceedings of the ACM on Human-Computer Interaction*. CSCW 3. Art. no. 152, pp. 1–25. URL: https://doi.org/10.1145/3359254.

Ames, Morgan G. (Nov. 2018). "Hackers, Computers, and Cooperation: A Critical History of Logo and Constructionist Learning". In: *Proceedings of the ACM on Human-Computer Interaction*. CSCW 2. Art. no. 18, pp. 1–19.

Ammenwerth, Elske, Carola Iller, and Ulrich Mansmann (July 2003). "Can evaluation studies benefit from triangulation? A case study". In: *International Journal of Medical Informatics*. MIE 2002 Special Issue 70.2, pp. 237–248.

Anti-Defamation League and Fair Play Alliance (Dec. 2020a). *Disruption and Harms in Online Gaming Framework*. Anti-Defamation League, pp. 1–48. URL: https://www.adl.org/sites/default/files/pdfs/2022-12/fpa-framework-121520-1331.pdf.

— (Dec. 2020b). *Disruption and Harms in Online Gaming Framework: Assessing the Behaviour Landscape*. Tech. rep. Anti-Defamation League, pp. 1–10. URL: https://fairplayalliance.org/wp-content/uploads/2020/12/FPA-Framework-Assessing-Behaviour-Landscape.pdf.

Arciniegas-Mendez, Maryi, Alexey Zagalsky, Margaret-Anne Storey, and Allyson Fiona Hadwin (Feb. 2017). "Using the Model of Regulation to Understand Software Development Collaboration Practices and Tool Support". In: *Proceedings of the 2017 ACM Conference on Computer Supported Cooperative Work and Social Computing*. CSCW '17. Portland, OR, USA: Association for Computing Machinery, pp. 1049–1065. URL: https://dl.acm.org/doi/10.1145/2998181.2998360.

Arguello, Jaime, Brian S. Butler, Elisabeth Joyce, Robert Kraut, Kimberly S. Ling, Carolyn Rosé, and Xiaoqing Wang (Apr. 2006). "Talk to me: foundations for successful individual-group interactions in online communities". In: *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*. CHI '06. Association for Computing Machinery, pp. 959–968. URL: https://dl.acm.org/doi/10.1145/1124772.1124916.

Atlantic Council (June 2023). *Scaling trust on the web: Comprehensive report of the task force for a trustworthy future web*. The Atlantic Council of the United States, pp. 1–150. URL: https://www.atlanticcouncil.org/wp-content/uploads/2023/06/scaling-trust-on-the-web_comprehensive-report.pdf.

Bakkes, Sander, Chek Tien Tan, and Yusuf Pisan (July 2012). "Personalised gaming: a motivation and overview of literature". In: *Proceedings of The 8th Australasian Conference on Interactive Entertainment: Playing the System*. IE '12. Art. no. 4. New York, NY, USA: Association for Computing Machinery, pp. 1–10. URL: https://doi.org/10.1145/2336727.2336731.

Bartle, Richard (2003). *Designing Virtual Worlds*. New Riders Games.

Barzilai-Nahon, Karine (2008). "Toward a theory of network gatekeeping: A framework for exploring information control". In: *Journal of the American society for information science and technology* 59.9, pp. 1493–1512.

Basil, Michael (2011). "Use of photography and video in observational research". In: *Qualitative Market Research: An International Journal* 14.3, pp. 246–257.

BBC (Jan. 2017). "Mum defends teen in gaming lawsuit". In: *BBC News*. URL: https://www.bbc.com/news/technology-42151862.

— (Sept. 2020). "CS:GO coaches banned from major esports series". In: *BBC News*. URL: https://www.bbc.com/news/newsbeat-54340022.

Bell, J. Bowyer (Jan. 1991). *Cheating and Deception*. 1st ed. Routledge.

Bengtsson, Mariette (Jan. 2016). "How to plan and perform a qualitative study using content analysis". In: *NursingPlus Open* 2, pp. 8–14. URL: https://doi.org/10.1016/j.npls.2016.01.001.

Benkler, Yochai (Nov. 2007). *The Wealth of Networks: How Social Production Transforms Markets and Freedom*. New Haven, CT; London: Yale University Press.

Beres, Nicole A., Julian Frommel, Elizabeth Reid, Regan L. Mandryk, and Madison Klarkowski (May 2021). "Don't You Know That You're Toxic: Normalization of Toxicity in Online Gaming". In: *Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems*. CHI '21. Art. no. 438. Yokohama Japan: Association for Computing Machinery, pp. 1–15. URL: https://dl.acm.org/doi/10.1145/3411764.3445157.

Beschastnikh, Ivan, Travis Kriplean, and David McDonald (2008). "Wikipedian self-governance in action: Motivating the policy lens". In: *Proceedings of the 2nd International AAAI Conference on Web and Social Media*. Vol. 2. ICWSM '08 1, pp. 27–35. URL: https://doi.org/10.1609/icwsm.v2i1.18611.

Bietz, Matthew J., Eric P. S. Baumer, and Charlotte P. Lee (Aug. 2010). "Synergizing in Cyberinfrastructure Development". In: *Computer Supported Cooperative Work (CSCW)* 19.3, pp. 245–281.

Blackburn, Jeremy, Ramanuja Simha, Nicolas Kourtellis, Xiang Zuo, Matei Ripeanu, John Skvoretz, and Adriana Iamnitchi (2012). "Branded with a Scarlet 'C': Cheaters in a Gaming Social Network". In: *Proceedings of the 21st International Conference on*

World Wide Web. WWW '12. Lyon, France: Association for Computing Machinery, pp. 81–90. URL: http://doi.acm.org/10.1145/2187836.2187848.

Blackwell, Lindsay, Nicole Ellison, Natasha Elliott-Deflo, and Raz Schwartz (Nov. 2019). "Harassment in Social Virtual Reality: Challenges for Platform Governance". In: *Proceedings of the ACM on Human-Computer Interaction*. CSCW 3. Art. no. 100, pp. 1–25. URL: https://doi.org/10.1145/3359202.

Blaukovitsch, Reinhard (Mar. 2022). "Why are some game studios reluctant to take cheating and piracy seriously?" In: *GamesBeat*. URL: https://venturebeat.com/2022/03/15/why-are-some-game-studios-reluctant-to-take-cheating-and-piracy-seriously/.

Böhme, Rainer, Richard Clayton, and Ben Collier (2021). "Silicon Den: Cybercrime is Entrepreneurship". In: *20th Workshop on the Economics of Information Security*. WEIS '21. URL: https://weis2021.econinfosec.org/wp-content/uploads/sites/9/2021/06/weis21-anderson.pdf.

Boldi, Arianna, Selina Cho, Yubo Kou, Amon Rapp, and Max V. Birk (Oct. 2023). "Methodological Challenges, Risks, and Ethical Implications in Game Research". In: *Companion Proceedings of the Annual Symposium on Computer-Human Interaction in Play*. CHI PLAY Companion '23. Stratford, ON, Canada: Association for Computing Machinery, pp. 350–351. URL: https://doi.org/10.1145/3573382.3616026.

— (Apr. 2025). "Ethical Challenges in Video Game Research: Experiences and Reflections". In: *Interactions* 32.3, pp. 34–39. URL: https://doi.org/10.1145/3723137.

Borges, M.R.S., P. Brezillon, J.A. Pino, and J.C. Pomerol (May 2004). "Bringing context to CSCW". In: *8th International Conference on Computer Supported Cooperative Work in Design*. Vol. 2, pp. 161–166.

Boudreau, Ian (2018). "Valve banned a record number of players in December". In: *PCGamesN*. URL: https://www.pcgamesn.com/counter-strike-global-offensive/vac-ban-waves-december-2018.

Bourdieu, Pierre (2002). "The Forms of Capital". In: *Readings in Economic Sociology*. Ed. by Nicole Woolsey Biggart. John Wiley & Sons, Ltd, pp. 280–291. URL: https://onlinelibrary.wiley.com/doi/abs/10.1002/9780470755679.ch15.

Boyd, Danah (2010). "Social Network Sites as Networked Publics: Affordances, Dynamics, and Implications". In: *Networked Self: Identity, Community, and Culture on Social Network Sites*. Ed. by Zizi Papacharissi. Routledge.

Braithwaite, Andrea (2016). "It's about ethics in games journalism? Gamergaters and geek masculinity". In: *Social Media + Society* 2.4. URL: https://doi.org/10.1177/2056305116672484.

Brehm, Jack W. (1966). *A theory of psychological reactance*. Academic Press.

Breitmayer, Bonnie J., Lioness Ayres, and Kathleen A. Knafl (1993). "Triangulation in Qualitative Research: Evaluation of Completeness and Confirmation Purposes". In: *Image: the Journal of Nursing Scholarship* 25.3, pp. 237–243.

Brereton, Pearl, Barbara A Kitchenham, David Budgen, Mark Turner, and Mohamed Khalil (2007). "Lessons from applying the systematic literature review process within the software engineering domain". In: *Journal of systems and software* 80.4, pp. 571–583.

Brewer, Russell, Melissa de Vel-Palumbo, Alice Hutchings, Thomas Holt, Andrew Goldsmith, and David Maimon (2019). *Cybercrime Prevention: Theory and Applications*. Springer.

Brown, Barry and Marek Bell (Nov. 2004). "CSCW at play: 'there' as a collaborative virtual environment". In: *Proceedings of the 2004 ACM Conference on Computer Supported Cooperative Work*. CSCW '04. Association for Computing Machinery, pp. 350–359. URL: https://doi.org/10.1145/1031607.1031666.

Brown, Emily and Paul Cairns (2004). "A Grounded Investigation of Game Immersion". In: *CHI '04 Extended Abstracts on Human Factors in Computing Systems*. CHI EA '04. Vienna, Austria: Association for Computing Machinery, pp. 1297–1300. URL: https://doi.org/10.1145/985921.986048.

Brown, Mike (June 2018). "The Finances of Fortnite". In: *LendEDU*. URL: https://lendedu.com/blog/finances-of-fortnite/.

Burgess, Jean and Joshua Green (Aug. 2018). *YouTube: Online Video and Participatory Culture*. John Wiley & Sons.

Burton, Thomas (2018). *Experimental Testing of Cyber-Crime Marketplace Disruption Techniques*. CDT Technical Paper 05/19. University of Oxford. URL: https://ora.ox.ac.uk/objects/uuid:53d0965d-5233-432e-8085-a9dab1f11237/files/m4cc07d9b754c799013f3e4a324ca70c4.

Butler, Brian, Lee Sproull, Sara Kiesler, and Robert Kraut (2007). "Community effort in online groups: Who does the work and why?" In: *Leadership at a Distance*. Psychology Press, pp. 187–210.

Butler, Brian S. (Dec. 2001). "Membership Size, Communication Activity, and Sustainability: A Resource-Based Model of Online Social Structures". In: *Information Systems Research* 12.4, pp. 346–362.

Byron, Tanya (2008). *Safer Children in a Digital World: The Report of the Byron Review*. Department for Children, Schools and Families.

Cai, Jie and Donghee Yvette Wohn (Nov. 2019). "What are Effective Strategies of Handling Harassment on Twitch? Users' Perspectives". In: *Conference Companion Publication of the 2019 on Computer Supported Cooperative Work and Social Computing*. CSCW '19. Association for Computing Machinery, pp. 166–170. URL: https://doi.org/10.1145/3311957.3359478.

Caillois, Roger (2001). *Man, Play, and Games*. University of Illinois Press.

Caldwell, Tracey (July 2013). "Plugging the cyber-security skills gap". In: *Computer Fraud & Security* 7, pp. 5–10.

Callele, David, Eric Neufeld, and Kevin Schneider (2008). "Requirements in Conflict: Player vs. Designer vs. Cheater". In: *2008 3rd International Workshop on Multimedia and Enjoyable Requirements Engineering—Beyond Mere Descriptions and with More Fun and Games*, pp. 12–21.

Carter, Marcus (Feb. 2022). *Treacherous Play*. The MIT Press.

Carter, Marcus, Kelly Bergstrom, and Darryl Woodford (Mar. 2016). *Internet Spaceships Are Serious Business: An EVE Online Reader*. Minneapolis, MN: University Of Minnesota Press.

Castronova, Edward (Dec. 2001). *Virtual Worlds: A First-Hand Account of Market and Society on the Cyberian Frontier*. CESifo Working Paper Series No. 618. Social Science Research Network. URL: https://papers.ssrn.com/abstract=294828.

Cavalli, Earnest (2008). "Police Refuse To Aid In Virtual Theft Case". In: *Wired*. URL: https://www.wired.com/2008/02/police-refuse-t/.

Cavusoglu, Huseyin, Zhuolun Li, and Ke-Wei Huang (Feb. 2015). "Can Gamification Motivate Voluntary Contributions? The Case of StackOverflow Q&A Community". In: *Proceedings of the 18th ACM Conference Companion on Computer Supported*

Cooperative Work and Social Computing. CSCW'15 Companion. Association for Computing Machinery, pp. 171–174. URL: https://doi.org/10.1145/2685553.2698999.

Centivany, Alissa (2016). "Values, ethics and participatory policymaking in online communities". In: *Proceedings of the Association for Information Science and Technology* 53.1, pp. 1–10. URL: https://doi.org/10.1002/pra2.2016.14505301058.

Chan, Chi Chuen, William Wai Lim Li, and Amy Sau Lam Chiu (Feb. 2019). *The Psychology of Chinese Gambling: A Cultural and Historical Perspective*. Springer.

Chatto, William A. (1848). *Facts and Speculations on the Origin and History of Playing Cards*. London: J. R. Smith.

Chau, Clement (2010). "YouTube as a participatory culture". In: *New Directions for Youth Development* 128, pp. 65–74.

Chen, Vivian Hsueh Hua and Jeremy Ong (Feb. 2018). "The rationalization process of online game cheating behaviors". In: *Information, Communication & Society* 21.2, pp. 273–287. URL: https://doi.org/10.1080/1369118X.2016.1271898.

Chen, Vivian Hsueh Hua and Yuehua Wu (July 2015). "Group identification as a mediator of the effect of players' anonymity on cheating in online games". In: *Behaviour & Information Technology* 34.7, pp. 658–667. URL: https://doi.org/10.1080/0144929X.2013.843721.

Chen, Ying-Chieh, Patrick S. Chen, Ronggong Song, and Larry Korba (Oct. 2004). "Online Gaming Crime and Security Issue: Cases and Countermeasures from Taiwan." In: *Proceedings of the 2nd Annual Conference on Privacy, Security and Trust*. PST '04. New Brunswick, Canada, pp. 131–136.

Chesney, Thomas, Iain Coyne, Brian Logan, and Neil Madden (2009). "Griefing in virtual worlds: Causes, casualties and coping strategies". In: *Information Systems Journal* 19.6, pp. 525–548.

Cho, Selina and Ivan Flechais (2022). "Cheating the Cheaters: A Look Inside the Toxic Culture of Game Cheating Communities". In: *Proceedings of the 2022 Digital Games Research Association International Conference: Bringing Worlds Together*. DiGRA '22. Kraków, Poland (virtual).

Cho, Selina, Jonathan Lusthaus, and Ivan Flechais (2023). "The Slippery Slope: Exploring the Parallels Between Game Cheating and Cybercrime Through Routine Activity Theory". In: *2023 APWG Symposium on Electronic Crime Research*. eCrime '23, pp. 1–13. URL: https://doi.org/10.1109/eCrime61234.2023.10485501.

— (Aug. 2024). "Unpacking the Dynamics of Harm in Game Cheating Communities: A Guiding Framework for Cross-Industry Intervention". In: *ACM Games* 2.2. Art. no. 12, pp. 1–17. URL: https://doi.org/10.1145/3656558.

Choi, Joohee and Yla Tausczik (Nov. 2018). "Will Too Many Editors Spoil The Tag? Conflicts and Alignment in Q&A Categorization". In: *Proceedings of the ACM on Human-Computer Interaction*. CSCW 2. Art. no. 38, pp. 1–19. URL: https://doi.org/10.1145/3274307.

Choo, Kim-Kwang Raymond (Nov. 2011). "The Cyber Threat Landscape: Challenges and Future Research Directions". In: *Computers & Security* 30.8, pp. 719–731. URL: https://doi.org/10.1016/j.cose.2011.08.004.

Clark, Mitchell (May 2021). "Fortnite made more than $9 billion in revenue in its first two years". In: *The Verge*. URL: https://www.theverge.com/2021/5/3/22417447/fortnite-revenue-9-billion-epic-games-apple-antitrust-case.

Cobb, Ann Kuckelman and Julia Nelson Hagemaster (1987). "Ten criteria for evaluating qualitative research proposals". In: *Journal of Nursing Education* 26.4, pp. 138–143.

Collier, Ben and Richard Clayton (June 2022). "A 'sophisticated attack'? Innovation, technical sophistication, and creativity in the cybercrime ecosystem". In: *21st Workshop on the Economics of Information Security*. WEIS '22. URL: https://weis2022.econinfosec.org/wp-content/uploads/sites/10/2022/06/weis22-collier.pdf.

Collier, Ben, Richard Clayton, Alice Hutchings, and Daniel Thomas (Sept. 2021). "Cybercrime is (often) boring: Infrastructure and alienation in a deviant subculture". In: *The British Journal of Criminology* 61.5, pp. 1407–1423. URL: https://doi.org/10.1093/bjc/azab026.

Consalvo, Mia (2005). "Cheating can be good for you: educational games and multiple play styles". In: *On the Horizon* 13.2, pp. 95–100.

— (2007). *Cheating: Gaining Advantage in Videogames*. Cambridge, MA: The MIT Press.

— (Oct. 2009). "There is No Magic Circle". In: *Games and Culture* 4.4, pp. 408–417.

Consalvo, Mia and Nathan Dutton (2006). "Game analysis: Developing a methodological toolkit for the qualitative study of games". In: *Game Studies* 6.1.

Cook, Daniel (Apr. 2012). "Loops and Arcs". In: *LOSTGARDEN*. URL: https://lostgarden.home.blog/2012/04/30/loops-and-arcs/.

Cook, Guy (Nov. 1992). *The Discourse of Advertising*. London: Routledge.

Corbin, Juliet M. and Anselm Strauss (Mar. 1990). "Grounded theory research: Procedures, canons, and evaluative criteria". In: *Qualitative Sociology* 13.1, pp. 3–21.

Cotton, Charles (1930). *Games and Gamesters of the Restoration: The Compleat Gamester*. G. Routledge and Sons, Ltd.

Cox, Joseph (Jan. 2022). "Activision Sues and Unmasks Alleged 'Call of Duty: Warzone' Cheat Sellers". In: *Vice*. URL: https://www.vice.com/en/article/3abaav/activision-lawsuit-sues-engine-owning-warzone.

CREST and National Crime Agency (2015). *Identify, Intervene, Inspire – Helping Young People to Pursue Careers in Cyber Security, Not Cyber Crime*. CREST. URL: https://www.nationalcrimeagency.gov.uk/who-we-are/publications/623-cyber-crime-report-crest-nca/file.

Csíkszentmihályi, Mihaly (1990). *Flow: The Psychology of Optimal Experience*. New York: Harper & Row.

Cui, Yichao, Naomi Yamashita, and Yi-Chieh Lee (Nov. 2022). "'We Gather Together We Collaborate Together': Exploring the Challenges and Strategies of Chinese Lesbian and Bisexual Women's Online Communities on Weibo". In: *Proceedings of the ACM on Human-Computer Interaction*. CSCW2 6. Art. no. 423. URL: https://doi.org/10.1145/3555148.

Curtis, Joanna, Gavin Oxburgh, and Pam Briggs (2022). "Heroes and Hooligans: The Heterogeneity of Video Game Modders". In: *Games and Culture* 17.2, pp. 219–243. URL: https://doi.org/10.1177/15554120211026255.

Dabbish, Laura, Colleen Stuart, Jason Tsay, and Jim Herbsleb (Feb. 2012). "Social coding in GitHub: transparency and collaboration in an open software repository". In: *Proceedings of the ACM 2012 Conference on Computer Supported Cooperative Work*. CSCW '12. New York, NY, USA: Association for Computing Machinery, pp. 1277–1286. URL: https://doi.org/10.1145/2145204.2145396.

Davis, Steven and W. Price (Dec. 2008). "Security issues for third party games: Technical, business and legal perspectives". In: *Computer Law & Security Review* 24, pp. 163–168.

De Paoli, Stefano and Aphra Kerr (2009). "The Cheating Assemblage in MMORPGs: Toward a sociotechnical description of cheating". In: *Proceedings of the 2009 Digital Games Research Association International Conference: Breaking New Ground—Innovation in Games, Play, Practice and Theory*. DiGRA '09, pp. 1–12.

Dearnley, Christine (2005). "A reflection on the use of semi-structured interviews". In: *Nurse Researcher* 13.1, pp. 19–28.

Denning, Dorothy E. (2001). "Activism, Hacktivism, and Cyberterrorism: The Internet as a Tool for Influencing Foreign Policy". In: *Networks and Netwars: The Future of Terror, Crime, and Militancy*. Ed. by John Arquilla and David Ronfeldt. Santa Monica, CA: Rand Corporation, pp. 239–288.

Devito, Michael A, Ashley Marie Walker, Jeremy Birnholtz, Kathryn Ringland, Kathryn Macapagal, Ashley Kraus, Sean Munson, Calvin Liang, and Herman Saksono (2019). "Social Technologies for Digital Wellbeing Among Marginalized Communities". In: *Conference Companion Publication of the 2019 on Computer Supported Cooperative Work and Social Computing*. CSCW '19 Companion, pp. 449–454. URL: https://doi.org/10.1145/3311957.3359442.

Dey, Tapajit, Jacob Logan Massengill, and Audris Mockus (Oct. 2016). "Analysis of Popularity of Game Mods: A Case Study". In: *Proceedings of the 2016 Annual Symposium on Computer-Human Interaction in Play Companion Extended Abstracts*. CHI PLAY Companion '16. New York, NY, USA: Association for Computing Machinery, pp. 133–139. URL: https://doi.org/10.1145/2968120.2987724.

Dibbell, Julian (Mar. 2007). *Play Money: Or, How I Quit My Day Job and Made Millions Trading Virtual Loot*. Basic Books.

Dishon, Gideon and Yasmin B Kafai (2022). "Connected civic gaming: rethinking the role of video games in civic education". In: *Interactive Learning Environments* 30.6, pp. 999–1010. URL: https://doi.org/10.1080/10494820.2019.1704791.

Dixit, Avinash K. (2011). *Lawlessness and Economics, Alternative Modes of Governance*. Princeton University Press.

Dixon-Woods, Mary, Shona Agarwal, David Jones, Bridget Young, and Alex Sutton (2005). "Synthesising qualitative and quantitative evidence: a review of possible methods". In: *Journal of Health Services Research & Policy* 10.1, pp. 45–53.

Doerfler, Periwinkle, Andrea Forte, Emiliano De Cristofaro, Gianluca Stringhini, Jeremy Blackburn, and Damon McCoy (Oct. 2021). "'I'm a Professor, which isn't usually a dangerous job': Internet-facilitated Harassment and Its Impact on Researchers". In: *Proceedings of the ACM on Human-Computer Interaction*. CSCW2 5. Art. no. 341, pp. 1–32. URL: https://doi.org/10.1145/3476082.

Doherty, Shawn M., Devin Liskey, Christopher M. Via, Christina Frederick, Jason P. Kring, and Dahai Liu (Sept. 2014). "An Analysis of Expressed Cheating Behaviors in Video Games". In: *Proceedings of the Human Factors and Ergonomics Society Annual Meeting*. HFES '14 58.1, pp. 2393–2396. URL: https://doi.org/10.1177/1541931214581498.

Donnelly, Joe (May 2016). "The Half-Life mod that took 17 years to land on Steam". In: *Eurogamer*. URL: https://www.eurogamer.net/articles/2016-05-01-the-half-life-mod-that-took-17-years-to-land-on-steam.

Doyle, Lynn H (2003). "Synthesis through meta-ethnography: paradoxes, enhancements, and possibilities". In: *Qualitative Research* 3.3, pp. 321–344.

Ducheneaut, Nicolas, Robert J. Moore, and Eric Nickell (Apr. 2007). "Virtual 'Third Places': A Case Study of Sociability in Massively Multiplayer Games". In: *Computer Supported Cooperative Work: The Journal of Collaborative Computing and Work Practices* 16, pp. 129–166.

Dumitrica, Delia (2011). "An exploration of cheating in a virtual gaming world". In: *Journal of Gaming & Virtual Worlds* 3.1.

Dupont, Benoît and Jonathan Lusthaus (2022). "Countering Distrust in Illicit Online Networks: The Dispute Resolution Strategies of Cybercriminals". In: *Social Science Computer Review* 40.4, pp. 892–913. URL: https://doi.org/10.1177/0894439321994623.

Durkheim, Émile (1964). *The Division of Labor in Society*. The Free Press of Glencoe.

Engelbart, Douglas C (1963). "A Conceptual Framework for the Augmentation of Man's Intellect". In: *Vistas in Information Handling* 1, pp. 1–29.

Etzioni, Amitai (1961). *A Comparative Analysis of Complex Organizations: On Power, Involvement, and Their Correlates*. New York: Free Press of Glencoe.

Evans, Sarah, Katie Davis, Abigail Evans, Julie Ann Campbell, David P. Randall, Kodlee Yin, and Cecilia Aragon (Feb. 2017). "More Than Peer Production: Fanfiction Communities as Sites of Distributed Mentoring". In: *Proceedings of the 2017 ACM Conference on Computer Supported Cooperative Work and Social Computing*. CSCW '17. New York, NY, USA: Association for Computing Machinery, pp. 259–272. URL: https://doi.org/10.1145/2998181.2998342.

Ewoldsen, David R., Cassie A. Eno, Bradley M. Okdie, John A. Velez, Rosanna E. Guadagno, and Jamie DeCoster (May 2012). "Effect of playing violent video games cooperatively or competitively on subsequent cooperative behavior". In: *Cyberpsychology, Behavior and Social Networking* 15.5, pp. 277–280. URL: https://doi.org/10.1089/cyber.2011.0308.

Fair Play Alliance (Mar. 2022). *White paper: Youth Criminal Conduct in Gaming - Workshop Learnings and Outcomes Report*. Tech. rep. Fair Play Alliance, pp. 1–17. URL: https://fairplayalliance.org/wp-content/uploads/2022/06/FPA-Youth-Criminal-Conduct-in-Gaming-Workshop.pdf.

Fields, Deborah A and Yasmin B Kafai (2010). "'Stealing From Grandma' or Generating Cultural Knowledge? Contestations and Effects of Cheating in a Tween Virtual World". In: *Games and Culture* 5.1, pp. 64–87.

Fields, Deborah A, Katarina Pantic, and Yasmin B Kafai (2015). "'I have a tutorial for this' the language of online peer support in the scratch programming community". In: *Proceedings of the 14th International Conference on Interaction Design and Children*, pp. 229–238. URL: https://doi.org/10.1145/2771839.2771863.

Fiesler, Casey, Jialun "Aaron" Jiang, Joshua McCann, Kyle Frye, and Jed R. Brubaker (June 2018). "Reddit Rules! Characterizing an Ecosystem of Governance". In: *Proceedings of the 12th International AAAI Conference on Web and Social Media*. Vol. 12. ICWSM '18 1. URL: https://www.aaai.org/ocs/index.php/ICWSM/ICWSM18/paper/view/17898.

Fiesler, Casey, Shannon Morrison, R. Benjamin Shapiro, and Amy S. Bruckman (Feb. 2017). "Growing Their Own: Legitimate Peripheral Participation for Computational Learning in an Online Fandom Community". In: *Proceedings of the 2017 ACM Conference on Computer Supported Cooperative Work and Social Computing*. CSCW

'17. Association for Computing Machinery, pp. 1375–1386. URL: https://dl.acm.org/doi/10.1145/2998181.2998210.

Finch, Emily (2001). "Issues of confidentiality in research into criminal activity: the legal and ethical dilemma". In: *Mountbatten Journal of Legal Studies* 5.1/2, pp. 34–50.

Flick, Uwe (1999). "Qualitative methods in the study of culture and development: an introduction". In: *Social Science Information* 38.4, pp. 625–629.

Forte, Andrea, Vanesa Larco, and Amy Bruckman (2009). "Decentralization in Wikipedia governance". In: *Journal of Management Information Systems* 26.1, pp. 49–72.

Fox, Jesse and Wai Yen Tang (Apr. 2014). "Sexism in online video games: The role of conformity to masculine norms and social dominance orientation". In: *Computers in Human Behavior* 33, pp. 314–320. URL: https://doi.org/10.1016/j.chb.2013.07.014.

— (Aug. 2017). "Women's experiences with general and sexual harassment in online video games: Rumination, organizational responsiveness, withdrawal, and coping strategies". In: *New Media & Society* 19.8, pp. 1290–1307. URL: https://doi.org/10.1177/1461444816635778.

Fusch, Patricia and Lawrence Ness (Sept. 2015). "Are We There Yet? Data Saturation in Qualitative Research". In: *Qualitative Report* 20, pp. 1408–1416.

Gabbiadini, Alessandro, Paolo Riva, Luca Andrighetto, Chiara Volpato, and Brad J. Bushman (2016). "Acting like a Tough Guy: Violent-Sexist Video Games, Identification with Game Characters, Masculine Beliefs, & Empathy for Female Violence Victims". In: *PLoS ONE* 11.4. URL: https://doi.org/10.1371/journal.pone.0152121.

Gal-Oz, Ayelet and Oren Zuckerman (Oct. 2015). "Embracing Cheating in Gamified Fitness Applications". In: *Proceedings of the 2015 Annual Symposium on Computer-Human Interaction in Play*. CHI PLAY '15. Association for Computing Machinery, pp. 535–540. URL: https://doi.org/10.1145/2793107.2810298.

Gee, James Paul (2004). *Situated language and learning: A critique of traditional schooling*. Psychology Press.

Gelman, Ben U., Chris Beckley, Aditya Johri, Carlotta Domeniconi, and Seungwon Yang (2016). "Online Urbanism: Interest-based Subcultures as Drivers of Informal Learning in an Online Community". In: *Proceedings of the 3rd ACM Conference on Learning @ Scale*. L@S '16. Edinburgh, Scotland, UK: Association for Computing Machinery, pp. 21–30. URL: https://doi.org/10.1145/2876034.2876052.

Ghai, Yash (2000). *Autonomy and Ethnicity: Negotiating Competing Claims in Multi-Ethnic States*. Cambridge Studies in Law and Society. Cambridge University Press. URL: https://www.cambridge.org/core/books/autonomy-and-ethnicity/0B2CE3857884B49EA87EB1B978C4FE48.

Gillespie, Tarleton (July 2018). *Custodians of the Internet: Platforms, Content Moderation, and the Hidden Decisions That Shape Social Media*. Illustrated ed. Yale University Press.

Goodpastor, Joshua (Mar. 2021). "Call of Duty: Warzone Cheats Are Being Advertised By Google". In: *Game Rant*. URL: https://gamerant.com/call-duty-warzone-cheats-advertised-google/.

Gostev, Aleksandr, Oleg Zaitsev, Sergey Golovanov, and Vitaly Kamluk (2008). "Kaspersky Security Bulletin. Malware Evolution 2010". In: *Kaspersky Lab*, pp. 1–28. URL: https://media.kasperskycontenthub.com/wp-content/uploads/sites/43/2018/03/20140350/kaspersky_security_bulletin_part_1_threats_en.pdf.

Graham, Elyse (Sept. 2019). "Boundary maintenance and the origins of trolling". In: *New Media & Society* 21.9, pp. 2029–2047. URL: https://doi.org/10.1177/1461444819837561.

Grand View Research (May 2022). *Video Game Market Size & Share Growth Report, 2030*. Report. Report ID: GVR-4-68038-527-4. URL: https://www.grandviewresearch.com/industry-analysis/video-game-market.

Griffiths, M. D., Mark N. O. Davies, and Darren Chappell (Feb. 2004). "Online computer gaming: a comparison of adolescent and adult gamers". In: *Journal of Adolescence*. Video Games and Public Health 27.1, pp. 87–96.

Grimmelmann, James (2015). "The Virtues of Moderation". In: *Yale Journal of Law and Technology* 17, pp. 42–109.

Grodal, Torben (2000). "Video Games and the Pleasures of Control". In: *Media Entertainment: The Psychology of Its Appeal*. Ed. by Dolf Zillmann and Peter Vorderer. New York: Routledge, pp. 197–213.

Grubb, Jeff (May 2021). "GTA Online's growth complicates a Grand Theft Auto 6 launch for Rockstar". In: *VentureBeat*. URL: https://venturebeat.com/games/gta-onlines-growth-complicates-a-grand-theft-auto-6-launch-for-rockstar/.

Grudin, Jonathan (May 1994). "Computer-supported cooperative work: History and focus". In: *Computer* 27.5, pp. 19–26.

Guba, Egon G. and Yvonna S. Lincoln (1989). *Fourth Generation Evaluation*. SAGE.

— (1994). "Competing paradigms in qualitative research". In: *Handbook of qualitative research*. Ed. by Norman K. Denzin and Yvonna S. Lincoln. Thousand Oaks, CA: Sage Publications, pp. 105–117.

Haig, Brian D (Sept. 2018). "An Abductive Theory of Scientific Method". In: *Method Matters in Psychology: Essays in Applied Philosophy of Science*. Springer, pp. 35–64.

Halfaker, Aaron, R. Stuart Geiger, Jonathan T. Morgan, and John Riedl (May 2013). "The Rise and Decline of an Open Collaboration System: How Wikipedia's Reaction to Popularity Is Causing Its Decline". In: *American Behavioral Scientist* 57.5, pp. 664–688.

Hamilton, William A., Oliver Garretson, and Andruid Kerne (Apr. 2014). "Streaming on Twitch: Fostering Participatory Communities of Play within Live Mixed Media". In: *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*. CHI '14. Association for Computing Machinery, pp. 1315–1324. URL: https://doi.org/10.1145/2556288.2557048.

Hamlen, Karla R. and Fran C. Blumberg (Jan. 2015). "Chapter 4: Problem Solving Through 'Cheating' in Video Games". In: *Video Games and Creativity*. Ed. by Garo P. Green and James C. Kaufman. Academic Press, pp. 83–97. URL: https://doi.org/10.1016/B978-0-12-801462-2.00004-7.

Harlow, Steve, Rhoda Cummings, and Suzanne M. Aberasturi (Mar. 2007). "Karl Popper and Jean Piaget: A Rationale for Constructivism". In: *The Educational Forum* 71.1, pp. 41–48.

Harris, Alexa M., Diego Gómez-Zará, Leslie A. DeChurch, and Noshir S. Contractor (Nov. 2019). "Joining Together Online: The Trajectory of CSCW Scholarship on Group Formation". In: *Proceedings of the ACM on Human-Computer Interaction*. CSCW 3. Art. no. 148, pp. 1–27. URL: https://doi.org/10.1145/3359250.

Hassenzahl, Marc (Dec. 2004). "The Interplay of Beauty, Goodness, and Usability in Interactive Products". In: *Human–Computer Interaction* 19.4, pp. 319–349.

Hassenzahl, Marc and Noam Tractinsky (Mar. 2006). "User experience–a research agenda". In: *Behaviour & Information Technology* 25.2, pp. 91–97. URL: https://doi.org/10.1080/01449290500330331.

Heidegger, Martin (1977). *Basic Writings: From Being and Time (1927) to the Task of Thinking (1964)*. Ed. by David Farrell Krell. New York: Harper Perennial Modern Thought.

Henderson, Willie (Apr. 1995). "Making a Market: The institutional transformation of an African society". In: *African Affairs* 94.375, pp. 295–296.

High Court of Justice of England and Wales (Jan. 2020). *Take-Two Interactive Software, Inc. and another v. Nathan James and others*. IL-2018-000094. URL: https://www.bailii.org/ew/cases/EWHC/Patents/2020/179.html.

Holden, Mary T. and Patrick Lynch (Dec. 2004). "Choosing the Appropriate Methodology: Understanding Research Philosophy". In: *The Marketing Review* 4.4, pp. 397–409. URL: https://doi.org/10.1362/1469347042772428.

Hooton, Christopher (Jan. 2014). "GTA Online: Rockstar to retrospectively ban cheaters using in-game". In: *The Independent*. URL: https://www.independent.co.uk/games/gta-online-rockstar-to-retrospectively-ban-cheaters-using-ingame-money-glitch-9064293.html.

Hsieh, Gary, Youyang Hou, Ian Chen, and Khai N. Truong (Feb. 2013). "'Welcome!': social and psychological predictors of volunteer socializers in online communities". In: *Proceedings of the 2013 Conference on Computer Supported Cooperative Work*. CSCW '13. Association for Computing Machinery, pp. 827–838. URL: https://doi.org/10.1145/2441776.2441870.

Hsieh, Hsiu-Fang and Sarah E. Shannon (2005). "Three approaches to qualitative content analysis". In: *Qualitative Health Research* 15.9, pp. 1277–1288. URL: https://doi.org/10.1177/1049732305276687.

Huizinga, Johan (1944). *Homo Ludens: A Study of the Play-Element in Culture*. Switzerland: Routledge & Kegan Paul.

Humphries, Matthew (Dec. 2016). "South Korea Makes Game Hacking Illegal". In: *PCMAG*. URL: https://www.pcmag.com/news/south-korea-makes-game-hacking-illegal.

Hunicke, Robin, Marc LeBlanc, and Robert Zubek (2004). "MDA: A formal approach to game design and game research". In: *Proceedings of the AAAI Workshop on Challenges in Game AI*. Vol. 4. 1. San Jose, CA, USA, pp. 1–5. URL: https://aaai.org/papers/ws04-04-001-mda-a-formal-approach-to-game-design-and-game-research/.

Hwang, Sohyeon and Jeremy D. Foote (Oct. 2021). "Why Do People Participate in Small Online Communities?" In: *Proceedings of the ACM on Human-Computer Interaction*. CSCW2 5. Art. no. 462, pp. 1–25. URL: https://doi.org/10.1145/3479606.

Irdeto (2018). *Irdeto Global Gaming Survey Report: The last checkpoint for cheating*. Irdeto. URL: https://resources.irdeto.com/irdeto-global-gaming-survey/irdeto-global-gaming-survey-report-2.

Irwin, Sidney V. and Anjum Naweed (Oct. 2018). "BM'ing, Throwing, Bug Exploiting, and Other Forms of (Un)Sportsmanlike Behavior in CS:GO Esports". In: *Games and Culture* 15.4, pp. 411–433. URL: https://doi.org/10.1177/1555412018804952.

Jabareen, Yosef (Dec. 2009). "Building a Conceptual Framework: Philosophy, Definitions, and Procedure". In: *International Journal of Qualitative Methods* 8.4, pp. 49–62. URL: https://doi.org/10.1177/160940690900800406.

Jenkins, Henry (2006). *Fans, Bloggers, and Gamers: Exploring Participatory Culture*. NYU Press.
— (2008). *Convergence Culture: Where Old and New Media Collide*. NYU Press.
— (2009). *Confronting the Challenges of Participatory Culture: Media Education for the 21st Century*. The MIT Press.
— (2012). *Textual Poachers: Television Fans and Participatory Culture*. 2nd ed. Originally published 1992. Routledge.
Jenkins, Henry, Mizuko Ito, and Danah Boyd (2015). *Participatory Culture in a Networked Era: A Conversation on Youth, Learning, Commerce, and Politics*. John Wiley & Sons.
Jennett, Charlene, Anna L. Cox, Paul Cairns, Samira Dhoparee, Andrew Epps, Tim Tijs, and Alison Walton (2008). "Measuring and defining the experience of immersion in games". In: *International Journal of Human-Computer Studies* 66.9, pp. 641–661. URL: https://doi.org/10.1016/j.ijhcs.2008.04.004.
Jiang, Jialun Aaron, Charles Kiene, Skyler Middler, Jed R. Brubaker, and Casey Fiesler (Nov. 2019). "Moderation Challenges in Voice-based Online Communities on Discord". In: *Proceedings of the ACM on Human-Computer Interaction*. CSCW 3. Art. no. 55, pp. 1–23. URL: https://doi.org/10.1145/3359157.
Jiang, Jialun Aaron, Skyler Middler, Jed R. Brubaker, and Casey Fiesler (Oct. 2020). "Characterizing Community Guidelines on Social Media Platforms". In: *Conference Companion Publication of the 2020 on Computer Supported Cooperative Work and Social Computing*. CSCW '20 Companion. Association for Computing Machinery, pp. 287–291. URL: https://doi.org/10.1145/3406865.3418312.
Johansen, Robert (1991). "Groupware: Future directions and wild cards". In: *Journal of Organizational Computing and Electronic Commerce* 1.2, pp. 219–227.
Johnson, Mark R. and Jamie Woodcock (Feb. 2019). "'It's like the gold rush': the lives and careers of professional video game streamers on Twitch.tv". In: *Information, Communication & Society* 22.3, pp. 336–351.
Jordan, Tim (2008). *Hacking: Digital media and technological determinism*. Polity.
Kahila, Juho, Teemu Valtonen, Sonsoles López-Pernas, Mohammed Saqr, Henriikka Vartiainen, Sanni Kahila, and Matti Tedre (2023). "A Typology of Metagamers: Identifying Player Types Based on Beyond the Game Activities". In: *Games and Culture*, pp. 38–58. URL: https://doi.org/10.1177/15554120231187758.
Karami, Mohammad and Damon McCoy (2013). "Rent to pwn: Analyzing commodity booter DDoS services". In: *Usenix ;login:* 38.6, pp. 20–23. URL: https://www.usenix.org/system/files/login/articles/05_karami-online.pdf.
Karkallis, Panicos, Jorge Blasco, Guillermo Suarez-Tangil, and Sergio Pastrana (Oct. 2021). "Detecting Video-Game Injectors Exchanged in Game Cheating Communities". In: *26th European Symposium on Research in Computer Security*. ESORICS '21. Darmstadt, Germany: Springer-Verlag, pp. 305–324. URL: https://doi.org/10.1007/978-3-030-88418-5_15.
Kaspersky (Aug. 2021). "Analytical report on gaming-related cyberthreats in 2020–2021". In: *Securelist by Kaspersky*. https://securelist.com/game-related-cyberthreats/103675/.
Kasurinen, Jussi, Maria Palacin-Silva, and Erno Vanhala (2017). "What Concerns Game Developers? A Study on Game Development Processes, Sustainability and Metrics". In: *Proceedings of the 8th Workshop on Emerging Trends in Software Metrics*.

WETSoM '17. Buenos Aires, Argentina: IEEE Press, pp. 15–21. URL: https://doi.org/10.1109/WETSoM.2017.3.

Kaufmann, Mareile and Meropi Tzanetakis (Dec. 2020). "Doing Internet research with hard-to-reach communities: methodological reflections on gaining meaningful access". In: *Qualitative Research* 20.6, pp. 927–944. URL: https://doi.org/10.1177/146879412090489.

Kayes, Imrul, Nicolas Kourtellis, Daniele Quercia, Adriana Iamnitchi, and Francesco Bonchi (2015). "Cultures in Community Question Answering". In: *Proceedings of the 26th ACM Conference on Hypertext & Social Media*. HT '15. Guzelyurt, Northern Cyprus: Association for Computing Machinery, pp. 175–184. URL: https://doi.org/10.1145/2700171.2791034.

Kerr, Orin (Aug. 2017). "The Kronos indictment: Is it a crime to create and sell malware?" In: *Washington Post*. URL: https://www.washingtonpost.com/news/volokh-conspiracy/wp/2017/08/03/the-kronos-indictment-it-a-crime-to-create-and-sell-malware/.

Kiene, Charles, Andrés Monroy-Hernández, and Benjamin Mako Hill (May 2016). "Surviving an 'Eternal September': How an Online Community Managed a Surge of Newcomers". In: *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems*. CHI '16. Association for Computing Machinery, pp. 1152–1156. URL: https://doi.org/10.1145/2858036.2858356.

Kim, Ji Eun and Milena Tsvetkova (Dec. 2021). "Cheating in online gaming spreads through observation and victimization". In: *Network Science* 9.4, pp. 425–442. URL: https://doi.org/10.1017/nws.2021.19.

Kimppa, K. K. and A. K. Bissett (Dec. 2005). "The Ethical Significance of Cheating in Online Computer Games". In: *The International Review of Information Ethics* 4, pp. 31–38. URL: https://doi.org/10.29173/irie165.

King, Daniel L and Paul H Delfabbro (2014). "The cognitive psychology of Internet gaming disorder". In: *Clinical Psychology Review* 34.4, pp. 298–308. URL: https://doi.org/10.1016/j.cpr.2014.03.006.

Kittur, Aniket and Robert E. Kraut (Nov. 2008). "Harnessing the Wisdom of Crowds in Wikipedia: Quality Through Coordination". In: *Proceedings of the 2008 ACM Conference on Computer Supported Cooperative Work*. CSCW '08. New York, NY, USA: Association for Computing Machinery, pp. 37–46. URL: https://doi.org/10.1145/1460563.1460572.

Kollock, Peter and Marc Smith (1996). "Managing the Virtual Commons: Cooperation and Conflict in Computer Communities". In: *Computer-Mediated Communication: Linguistic, Social, and Cross-Cultural Perspectives*. Ed. by Susan Herring. Philadelphia, PA: John Benjamins, pp. 109–128.

Kooiman, Jan (1993). *Modern Governance: New Government-Society Interactions*. SAGE Publications.

— (Apr. 2003). *Governing as Governance*. SAGE Publications.

Kooiman, Jan and Martijn van Vliet (Sept. 2000). "Self-Governance As a Mode of Societal Governance". In: *Public Management: An International Journal of Research and Theory* 2.3, pp. 359–378.

Kou, Yubo (Oct. 2021). "Punishment and Its Discontents: An Analysis of Permanent Ban in an Online Game Community". In: *Proceedings of the ACM on Human-Computer Interaction*. CSCW2 5. Art. no. 334, pp. 1–21. URL: https://doi.org/10.1145/3476075.

Kou, Yubo, Xinning Gui, Shaozeng Zhang, and Bonnie Nardi (Dec. 2017). "Managing Disruptive Behavior through Non-Hierarchical Governance: Crowdsourcing in League of Legends and Weibo". In: *Proceedings of the ACM on Human-Computer Interaction*. CSCW 1. Art. no. 62, pp. 1–17. URL: https://doi.org/10.1145/3134697.

Kou, Yubo and Bonnie Nardi (Feb. 2013). "Regulating anti-social behavior on the Internet: The example of League of Legends". In: *iSchools, University of Illinois Urbana-Champaign*. URL: https://www.ideals.illinois.edu/handle/2142/39981.

Kovács, Gyöngyi and Karen M Spens (Feb. 2005). "Abductive reasoning in logistics research". In: *International Journal of Physical Distribution & Logistics Management* 35.2, pp. 132–144.

Krapp, Peter and Gustavo Fischer (Aug. 2020). "Digital Culture between Distribution and Remix". In: *Fronteiras–estudos midiáticos* 22.2, pp. 1–10. URL: https://doi.org/10.4013/fem.2020.222.01.

Krippendorff, Klaus (May 2018). *Content Analysis: An Introduction to Its Methodology*. SAGE Publications.

Kristiadi, Dedy Prasetya, Yogi Udjaja, Budiman Supangat, Randy Yoga Prameswara, Harco Leslie Hendric Spits Warnars, Yaya Heryadi, and Worapan Kusakunniran (Nov. 2017). "The effect of UI, UX and GX on video games". In: *2017 IEEE International Conference on Cybernetics and Computational Intelligence*. CyberneticsCom, pp. 158–163. URL: https://doi.org/10.1109/CYBERNETICSCOM.2017.8311702.

Kücklich, Julian (2008). "Forbidden Pleasures: Cheating in Computer Games". In: *The Pleasures of Computer Gaming: Essays on Cultural History, Theory and Aesthetics*. Ed. by Melanie Swalwell and Jason Wilson. Jefferson, NC: McFarland, pp. 52–71.

Kuo, Andrew, Richard J Lutz, and Jacob L Hiler (2016). "Brave new World of Warcraft: A conceptual framework for active escapism". In: *Journal of Consumer Marketing* 33.7, pp. 498–506.

Kushner, Saville (Apr. 1996). "The Limits of Constructivism in Evaluation". In: *Evaluation* 2.2, pp. 189–200.

Kwak, Haewoon, Jeremy Blackburn, and Seungyeop Han (Apr. 2015). "Exploring Cyberbullying and Other Toxic Behavior in Team Competition Online Games". In: *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems*. CHI '15. Association for Computing Machinery, pp. 3739–3748. URL: https://doi.org/10.1145/2702123.2702529.

Lanciani, Rodolfo (1892). "Gambling and Cheating in Ancient Rome". In: *The North American Review* 155.428, pp. 97–105.

Lazzaro, Nicole (2009). "Why We Play: Affect and the Fun of Games". In: *Human-Computer Interaction: Designing for Diverse Users and Domains*. Ed. by Andrew Sears and Julie A. Jacko. Vol. 155. CRC Press, pp. 679–700.

Lee, Allen S and Richard L Baskerville (2003). "Generalizing generalizability in information systems research". In: *Information systems research* 14.3, pp. 221–243.

Lee, Charlotte P. and Drew Paine (Feb. 2015). "From The Matrix to a Model of Coordinated Action (MoCA): A Conceptual Framework of and for CSCW". In: *Proceedings of the 18th ACM Conference on Computer Supported Cooperative Work and Social Computing*. CSCW '15. New York, NY, USA: Association for Computing Machinery, pp. 179–194. URL: https://dl.acm.org/doi/10.1145/2675133.2675161.

Lee, Daniel, Dayi Lin, Cor-Paul Bezemer, and Ahmed E. Hassan (July 2020). "Building the Perfect Game: An Empirical Study of Game Modifications". In: *Empirical Software Engineering* 25.4, pp. 2485–2518.

Lee, Daniel, Gopi Krishnan Rajbahadur, Dayi Lin, Mohammed Sayagh, Cor-Paul Bezemer, and Ahmed E. Hassan (Sept. 2020). "An Empirical Study of the Characteristics of Popular Minecraft Mods". In: *Empirical Software Engineering* 25.5, pp. 3396–3429.

Lehdonvirta, Vili (Apr. 2010). "Virtual Worlds Don't Exist: Questioning the Dichotomous Approach in MMO Studies". In: *Game Studies* 10.1. URL: http://gamestudies.org/1001/articles/lehdonvirta.

Levitt, Steven D. and Sudhir Alladi Venkatesh (Aug. 2000). "An Economic Analysis of a Drug-Selling Gang's Finances". In: *The Quarterly Journal of Economics* 115.3, pp. 755–789.

Limelight (2020). "The State of Online Gaming 2020". In: *Limelight*. URL: https://www.limelight.com/resources/white-paper/state-of-online-gaming-2020/.

Linderoth, Jonas and Torill Elvira Mortensen (2015). "Dark Play: The Aesthetics of Controversial Playfulness". In: *The Dark Side of Game Play: Controversial Issues in Playful Environments*. Ed. by Torill Elvira Mortensen, Jonas Linderoth, and Ashley M. L. Brown. New York: Routledge, pp. 3–12.

Lingel, Jessa and Danah Boyd (2013). "'Keep it secret, keep it safe': Information poverty, information norms, and stigma". In: *Journal of the American Society for Information Science and Technology* 64.5, pp. 981–991.

Lingel, Jessa and Adam Golub (Sept. 2015). "In Face on Facebook: Brooklyn's Drag Community and Sociotechnical Practices of Online Communication". In: *Journal of Computer-Mediated Communication* 20.5, pp. 536–553.

Lingel, Jessica, Aaron Trammell, Joe Sanchez, and Mor Naaman (Feb. 2012). "Practices of information and secrecy in a punk rock subculture". In: *Proceedings of the ACM 2012 conference on Computer Supported Cooperative Work*. CSCW '12. Association for Computing Machinery, pp. 157–166. URL: https://doi.org/10.1145/2145204.2145230.

Linser, Roni, Nina Ree-Lindstad, and Tone Vold (July 2008). "The Magic Circle-Game design principles and online role-play simulations". In: *World Conference on Educational Multimedia, Hypermedia & Telecommunications*. ED-MEDIA '08.

Liu, Daiping, Xing Gao, Mingwei Zhang, Haining Wang, and Angelos Stavrou (2017). "Detecting Passive Cheats in Online Games via Performance-Skillfulness Inconsistency". In: *Proceedings of the 47th Annual IEEE/IFIP International Conference on Dependable Systems and Networks*. DSN '17. IEEE, pp. 615–626. URL: https://doi.org/10.1109/DSN.2017.20.

Lusthaus, Jonathan (Oct. 2018). *Industry of Anonymity: Inside the Business of Cybercrime*. Cambridge, MA; London, UK: Harvard University Press.

Ma, Renkai, Xinning Gui, and Yubo Kou (Nov. 2022). "Esports Governance: An Analysis of Rule Enforcement in League of Legends". In: *Proceedings of the ACM on Human-Computer Interaction*. CSCW2 6. Art. no. 440, pp. 1–28. URL: https://doi.org/10.1145/3555541.

Macdonald, Mitch and Richard Frank (Jan. 2017). "The network structure of malware development, deployment and distribution". In: *Global Crime* 18.1, pp. 49–69.

Madden, Daniel, Yuxuan Liu, Haowei Yu, Mustafa Feyyaz Sonbudak, Giovanni M Troiano, and Casper Harteveld (2021). "'Why Are You Playing Games?

You Are a Girl!': Exploring Gender Biases in Esports". In: *Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems*. CHI '21. Art. no. 323. Yokohama, Japan: Association for Computing Machinery, pp. 1–15. URL: https://doi.org/10.1145/3411764.3445248.

Maher, Brendan (Mar. 2016). "Can a video game company tame toxic behaviour?" In: *Nature* 531.7596, pp. 568–71.

Maiberg, Emanuel (Apr. 2014). "Hacks! An investigation into the million-dollar business of video game cheating". In: *PC Gamer*. URL: https://www.pcgamer.com/hacks-an-investigation-into-aimbot-dealers-wallhack-users-and-the-million-dollar-business-of-video-game-cheating/.

Malterud, Kirsti, Volkert Dirk Siersma, and Ann Dorrit Guassora (Nov. 2016). "Sample Size in Qualitative Interview Studies: Guided by Information Power". In: *Qualitative Health Research* 26.13, pp. 1753–1760.

Marlatt, Rick (2020). "Capitalizing on the craze of Fortnite: Toward a conceptual framework for understanding how gamers construct communities of practice". In: *Journal of Education* 200.1, pp. 3–11.

Martin, Chase Bowen and Mark Deuze (2009). "The Independent Production of Culture: A Digital Games Case Study". In: *Games and Culture* 4.3, pp. 276–295. URL: https://doi.org/10.1177/1555412009339732.

Mason, Winter and Duncan J. Watts (June 2009). "Financial incentives and the 'performance of crowds'". In: *Proceedings of the ACM SIGKDD Workshop on Human Computation*. HCOMP '09. Association for Computing Machinery, pp. 77–85. URL: https://doi.org/10.1145/1600150.1600175.

Massanari, Adrienne (Mar. 2017). "#Gamergate and The Fappening: How Reddit's algorithm, governance, and culture support toxic technocultures". In: *New Media & Society* 19.3, pp. 329–346. URL: https://doi.org/10.1177/1461444815608807.

Matias, J. Nathan (May 2016). "Going Dark: Social Factors in Collective Action Against Platform Operators in the Reddit Blackout". In: *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems*. CHI '16. San Jose, CA, USA: Association for Computing Machinery, pp. 1138–1151. URL: https://dl.acm.org/doi/10.1145/2858036.2858391.

— (Apr. 2019). "The Civic Labor of Volunteer Moderators Online". In: *Social Media + Society* 5.2. URL: https://doi.org/10.1177/2056305119836778.

McArthur, John A and Ashleigh Farley White (2016). "Twitter chats as third places: Conceptualizing a digital gathering site". In: *Social Media + Society* 2.3. URL: https://doi.org/10.1177/2056305116665857.

McIntyre, Victoria (2016). "Do(x) You Really Want to Hurt Me: Adapting IIED as a Solution to Doxing by Reshaping Intent". In: *Tulane Journal of Technology and Intellectual Property* 19, p. 111.

Meades, Alan (2015a). "Boosting, Glitching and Modding Call of Duty: Assertive Dark-Play Manifestations, Communities, Pleasures, and Organic Resilience". In: *The Dark Side of Game Play: Controversial Issues in Playful Environments*. Ed. by Torill Elvira Mortensen, Jonas Linderoth, and Ashley M. L. Brown. New York: Routledge, pp. 242–260.

— (2015b). *Understanding Counterplay in Video Games*. New York: Routledge. URL: https://www.taylorfrancis.com/books/9781315752655.

Melucci, Alberto (Sept. 1996). *Challenging Codes: Collective Action in the Information Age*. Cambridge, UK: Cambridge University Press.

Miller, Scott (Jan. 2004). "Auto-dynamic difficulty". In: *Game Matters*. URL: https://dukenukem.typepad.com/game_matters/2004/01/autoadjusting_g.html.

Minotti, Mike (Nov. 2021). "Game makers need to keep up with cheaters". In: *GamesBeat*. Panel discussion at GamesBeat Summit Next. URL: https://venturebeat.com/2021/11/09/game-makers-need-to-keep-up-with-cheaters/.

Moore, Ewan (Sept. 2020). "Rockstar Punishes 'GTA Online' Cheaters By Completely Resetting Their Accounts". In: *GAMINGbible*. URL: https://www.gamingbible.com/news/games-rockstar-punishes-gta-online-cheaters-by-resetting-their-accounts-20200907.

Morgan, Jonathan T., Siko Bouterse, Heather Walls, and Sarah Stierch (Feb. 2013). "Tea and Sympathy: Crafting Positive New User Experiences on Wikipedia". In: *Proceedings of the 2013 Conference on Computer Supported Cooperative Work*. CSCW '13. New York, NY, USA: Association for Computing Machinery, pp. 839–848. URL: https://dl.acm.org/doi/10.1145/2441776.2441871.

Moser, Carol, Paul Resnick, and Sarita Schoenebeck (May 2017). "Community Commerce: Facilitating Trust in Mom-to-Mom Sale Groups on Facebook". In: *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems*. CHI '17. New York, NY, USA: Association for Computing Machinery, pp. 4344–4357. URL: https://doi.org/10.1145/3025453.3025550.

Musabirov, Ilya, Denis Bulygin, Paul Okopny, and Alexander Sirotkin (May 2017). "Deconstructing Cosmetic Virtual Goods Experiences in Dota 2". In: *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems*. CHI '17. New York, NY, USA: Association for Computing Machinery, pp. 2054–2058. URL: https://doi.org/10.1145/3025453.3025893.

Myers, Michael D. (Apr. 2013). *Qualitative Research in Business and Management*. 2nd ed. London, England: SAGE Publications.

Nacke, Lennart and Anders Drachen (2011). "Towards a Framework of Player Experience Research". In: *Proceedings of the 2nd International Workshop on Evaluating Player Experience in Games at Foundations of Digital Games Conference*. Vol. 11. FDG.

Nacke, Lennart, Anders Drachen, and Stefan Göbel (2010). "Methods for Evaluating Gameplay Experience in a Serious Gaming Context". In: *International Journal of Computer Science in Sport* 9.2, pp. 40–51.

National Cyber Crime Unit/Prevent Team (Jan. 2017). *Pathways Into Cyber Crime*. Intelligence Assessment. 0325-CYB v1.0. National Crime Agency. URL: https://www.nationalcrimeagency.gov.uk/who-we-are/publications/6-pathways-into-cyber-crime-1/file.

Netzorg, Robert, Lauren Arnett, Augustin Chaintreau, and Eugene Wu (May 2021). "PopFactor: Live-Streamer Behavior and Popularity". In: *Proceedings of the 15th International AAAI Conference on Web and Social Media*. ICWSM '21 15.1, pp. 432–442. URL: https://ojs.aaai.org/index.php/ICWSM/article/view/18073/17876.

Noblit, George W. and R. Dwight Hare (1988). *Meta-Ethnography: Synthesizing Qualitative Studies*. Vol. 11. SAGE Publications.

Noguera, Joel (Dec. 2019). "Unveiling the Underground World of Anti-Cheats". Presented at Blackhat Europe 2019. URL: https://www.blackhat.com/eu-19/briefings/schedule/index.html#unveiling-the-underground-world-of-anti-cheats-17358.

Nonnecke, Blair and Jenny Preece (Apr. 2000). "Lurker Demographics: Counting the Silent". In: *Proceedings of the SIGCHI Conference on Human Factors in Computing*

Systems. CHI '00. New York, NY, USA: Association for Computing Machinery, pp. 73–80. URL: https://doi.org/10.1145/332040.332409.

Oldenburg, Ray (Aug. 1999). *The Great Good Place: Cafes, Coffee Shops, Bookstores, Bars, Hair Salons, and Other Hangouts at the Heart of a Community*. 3rd ed. Cambridge, MA: Da Capo Press.

Oliveira, Nigini, Nazareno Andrade, and Katharina Reinecke (2016). "Participation Differences in Q&A Sites Across Countries: Opportunities for Cultural Adaptation". In: *Proceedings of the 9th Nordic Conference on Human-Computer Interaction*. NordiCHI '16. Art. no. 6. Gothenburg, Sweden: Association for Computing Machinery. URL: https://doi.org/10.1145/2971485.2971520.

Ostrom, Elinor (Nov. 1990). *Governing the Commons: The Evolution of Institutions for Collective Action*. Cambridge University Press.

— (Sept. 2000). "Collective Action and the Evolution of Social Norms". In: *Journal of Economic Perspectives* 14.3, pp. 137–158. URL: https://www.aeaweb.org/articles?id=10.1257/jep.14.3.137.

Ostrom, Elinor, Wai Fung Lam, and Myungsuk Lee (July 1994). "The Performance of Self-Governing Irrigation Systems in Nepal". In: *Human Systems Management* 13, pp. 197–207.

Paaßen, Benjamin, Thekla Morgenroth, and Michelle Stratemeyer (Apr. 2017). "What is a True Gamer? The Male Gamer Stereotype and the Marginalization of Women in Video Game Culture". In: *Sex Roles* 76, pp. 421–435. URL: https://doi.org/10.1007/s11199-016-0678-y.

Paay, Jeni, Jesper Kjeldskov, Daniele Internicola, and Mikkel Thomasen (Sept. 2018). "Motivations and practices for cheating in Pokémon GO". In: *Proceedings of the 20th International Conference on Human-Computer Interaction with Mobile Devices and Services*. MobileHCI '18. Art. no. 35. Association for Computing Machinery, pp. 1–13. URL: http://dl.acm.org/citation.cfm?doid=3229434.3229466.

Paré, Guy, Marie-Claude Trudel, Mirou Jaana, and Spyros Kitsiou (2015). "Synthesizing information systems knowledge: A typology of literature reviews". In: *Information & Management* 52.2, pp. 183–199.

Pargman, Daniel and Peter Jakobsson (May 2008). "Do you believe in magic? Computer games in everyday life". In: *European Journal of Cultural Studies* 11.2, pp. 225–244.

Park, Seonghyun, Adil Ahmad, and Byoungyoung Lee (2020). "BlackMirror: Preventing Wallhacks in 3D Online FPS Games". In: *Proceedings of the 2020 ACM SIGSAC Conference on Computer and Communications Security*. CCS '20. Virtual Event, USA: Association for Computing Machinery, pp. 987–1000. URL: https://doi.org/10.1145/3372297.3417890.

Pasick, Adam (Apr. 2007). "FBI checks gambling in Second Life virtual world". In: *Reuters*. URL: https://www.reuters.com/article/us-secondlife-gambling-1-idUSHUN43981820070405.

Passmore, Cale J., Mathew K. Miller, Jun Liu, Cody J. Phillips, and Regan L. Mandryk (Nov. 2020). "A Cheating Mood: The Emotional and Psychological Benefits of Cheating in Single-Player Games". In: *Proceedings of the Annual Symposium on Computer-Human Interaction in Play*. CHI PLAY '20. New York, NY, USA: Association for Computing Machinery, pp. 58–70. URL: https://doi.org/10.1145/3410404.3414252.

Paterson, Barbara L., Sally E. Thorne, Connie Canam, and Carol Jillings (2001). *Meta-Study of Qualitative Health Research: A Practical Guide to Meta-Analysis and Meta-Synthesis*. Vol. 3. SAGE Publications.

Patton, Michael Quinn (2002). *Qualitative Research and Evaluation Methods*. Thousand Oaks, CA: SAGE Publications.

Peirce, Charles Sanders (1932). *Principles of Philosophy and Elements of Logic (Volumes I and II) (Collected Papers of Charles Sanders Peirce)*. Belknap Press of Harvard University Press.

— (1934). *Pragmatism and Pragmaticism and Scientific Metaphysics (Volumes V and VI) (Collected Papers of Charles Sanders Peirce)*. Belknap Press of Harvard University Press.

Pellicone, Anthony (May 2016). "Performing Play: Cultural Production on Twitch.tv". In: *Proceedings of the 2016 CHI Conference Extended Abstracts on Human Factors in Computing Systems*. CHI EA '16. San Jose, CA, USA: Association for Computing Machinery, pp. 244–248. URL: https://dl.acm.org/doi/10.1145/2851581.2859022.

Pitard, Jayne (Sept. 2017). "A Journey to the Centre of Self: Positioning the Researcher in Autoethnography". In: *Forum Qualitative Sozialforschung/Forum: Qualitative Social Research*. Vol. 18. 3. Art. no. 10. Institute for Qualitative Research and Center for Digital Systems (Freie Universität Berlin), pp. 1–20. URL: https://doi.org/10.17169/fqs-18.3.2764.

Polhamus, Blaine (Aug. 2021). "100,000 Call of Duty Warzone were banned by new anti-cheat system—Call of Duty". In: *eSports.com*. URL: https://www.esports.com/en/100000-call-of-duty-warzone-were-banned-by-new-anti-cheat-system-265762.

Pontiroli, Santiago (Oct. 2019). "The cake is a lie! Uncovering the secret world of malware-like cheats in video games". In: *Virus Bulletin Conference*. Kaspersky. URL: https://media.kasperskycontenthub.com/wp-content/uploads/sites/43/2019/10/25153416/PDF_The_cake_is_a_lie.pdf.

Poor, Nathaniel (Dec. 2014). "Computer game modders' motivations and sense of community: A mixed-methods approach". In: *New Media & Society* 16.8, pp. 1249–1267.

Pope, Catherine, Sue Ziebland, and Nicholas Mays (2000). "Analysing qualitative data". In: *BMJ* 320.7227, pp. 114–116.

Poretski, Lev and Ofer Arazy (Feb. 2017). "Placing Value on Community Co-creations: A Study of a Video Game 'Modding' Community". In: *Proceedings of the 2017 ACM Conference on Computer Supported Cooperative Work and Social Computing*. CSCW '17. Portland, OR, USA: Association for Computing Machinery, pp. 480–491. URL: https://dl.acm.org/doi/10.1145/2998181.2998301.

Power, Christopher, Paul Cairns, Mark Barlet, and Steven Weitz (Aug. 2023). "Whose Responsibility is Accessibility in Games Anyway? Everyone". In: *Proceedings of the 19th IFIP TC13 International Conference*. INTERACT '23. Springer-Verlag. York, United Kingdom, pp. 273–278. URL: https://doi.org/10.1007/978-3-031-42293-5_21.

Pritchard, Matthew (July 2000). "How to Hurt the Hackers: The Scoop on Internet Cheating and How You Can Combat It". In: *Gamasutra*. URL: https://www.gamasutra.com/view/feature/3149/how_to_hurt_the_hackers_the_scoop_.php.

Przybylski, Andrew K. and Netta Weinstein (Feb. 2017). "A Large-Scale Test of the Goldilocks Hypothesis: Quantifying the Relations Between Digital-Screen Use and the Mental Well-Being of Adolescents". In: *Psychological Science* 28.2, pp. 204–215.

Rambusch, Jana, Peter Jakobsson, and Daniel Pargman (Sept. 2007). "Exploring E-sports: A case study of game play in Counter-strike". In: *Proceedings of the 2007 Digital Games Research Association International Conference: Situated Play*. DiGRA '07. Tokyo, Japan, pp. 157–164.

Rand, Ayn (Nov. 1964). *The Virtue of Selfishness*. Signet.

Raney, Arthur A., Jason K. Smith, and Kaysee Baker (2006). "Adolescents and the Appeal of Video Games". In: *Playing Video Games: Motives, Responses, and Consequences*. Ed. by Peter Vorderer and Jennings Bryant. 1st ed. New York, NY: Routledge, pp. 165–179.

Rasmussen, Claire Elaine (2011). *The Autonomous Animal: Self-governance and the Modern Subject*. University of Minnesota Press.

Ribbens, Wannes, Yorick Poels, and Gertjan Lamotte (2011). "Fail with honour or win by cheating? Research into the perceptions and motivations of cheaters in online multiplayer games". In: *Vice city virtue. Moral issues in digital game play*. Ed. by K. Poels and S. Malliet. Leuven: Acco, pp. 177–203.

Ricochet, Team (Feb. 2022). "RICOCHET Anti-Cheat Progress Report – Season Two Update". In: *Call of Duty*. URL: https://www.callofduty.com/blog/2022/02/call-of-duty-warzone-ricochet-anti-cheat-season-two-update.

Rieger, Diana, Anna Sophie Kümpel, Maximilian Wich, Toni Kiening, and Georg Groh (2021). "Assessing the Extent and Types of Hate Speech in Fringe Communities: A Case Study of Alt-Right Communities on 8chan, 4chan, and Reddit". In: *Social Media + Society* 7.4. URL: https://doi.org/10.1177/20563051211052906.

Ritchie, Jane and Jane Lewis (Feb. 2003). *Qualitative Research Practice: A Guide for Social Science Students and Researchers*. SAGE Publications.

Rogers, Katja, Clemens Kamm, and Michael Weber (Oct. 2016). "Towards Player-Centric Adaptivity: Interactions of Gameplay Behaviour and Player Traits in a Survival Game". In: *Proceedings of the 2016 Annual Symposium on Computer-Human Interaction in Play Companion Extended Abstracts*. CHI PLAY Companion '16. New York, NY, USA: Association for Computing Machinery, pp. 269–276. URL: https://doi.org/10.1145/2968120.2987725.

Rogers, Yvonne (Oct. 1994). "Exploring obstacles: integrating CSCW in evolving organisations". In: *Proceedings of the 1994 ACM Conference on Computer Supported Cooperative Work*. CSCW '94. New York, NY, USA: Association for Computing Machinery, pp. 67–77. URL: https://dl.acm.org/doi/10.1145/192844.192875.

Ruberg, Bonnie, Amanda L. L. Cullen, and Kathryn Brewster (Oct. 2019). "Nothing but a 'titty streamer': legitimacy, labor, and the debate over women's breasts in video game live streaming". In: *Critical Studies in Media Communication* 36.5, pp. 466–481. URL: https://doi.org/10.1080/15295036.2019.1658886.

Rubin, Victoria L. and Sarah C. Camm (Jan. 2013). "Deception in video games: Examining varieties of griefing". In: *Online Information Review* 37.3, pp. 369–387.

Russell, J. S. (Sept. 2014). "Is There a Normatively Distinctive Concept of Cheating in Sport (or anywhere else)?" In: *Journal of the Philosophy of Sport* 41.3, pp. 303–323. URL: https://doi.org/10.1080/00948705.2013.832266.

Salen, Katie and Eric Zimmerman (2003). *Rules of Play: Game Design Fundamentals*. The MIT Press.

Sandelowski, Margarete and Julie Barroso (July 2006). *Handbook for Synthesizing Qualitative Research*. Springer Publishing Company.

Savulescu, Julian, Bennett Foddy, and Megan Clayton (2004). "Why we should allow performance enhancing drugs in sport". In: *British Journal of Sports Medicine* 38.6, pp. 666–670. URL: https://doi.org/10.1136/bjsm.2003.005249.

Scacchi, Walt (Oct. 2011). "Modding as an Open Source Approach to Extending Computer Game Systems". In: *Open Source Systems: Grounding Research*. Ed. by Scott A. Hissam, Barbara Russo, Manoel G. de Mendonça Neto, and Fabio Kon. IFIP Advances in Information and Communication Technology. Berlin, Heidelberg: Springer, pp. 62–74. URL: https://doi.org/10.1007/978-3-642-24418-6_5.

Schmidt, Kjeld and Liam Bannon (Mar. 1992). "Taking CSCW seriously". In: *Computer Supported Cooperative Work*. CSCW 1.1, pp. 7–40. URL: https://doi.org/10.1007/BF00752449.

Schneider, Nathan (2022). "Admins, mods, and benevolent dictators for life: The implicit feudalism of online communities". In: *New Media & Society* 24.9, pp. 1965–1985. URL: https://doi.org/10.1177/1461444820986553.

Seering, Joseph (Nov. 2019). "Building More Positive Online Communities through Improving Moderation and Strengthening Social Identity". In: *Conference Companion Publication of the 2019 on Computer Supported Cooperative Work and Social Computing*. CSCW '19 Companion. Austin TX USA: Association for Computing Machinery, pp. 89–93. URL: https://dl.acm.org/doi/10.1145/3311957.3361855.

— (Oct. 2020). "Reconsidering Self-Moderation: the Role of Research in Supporting Community-Based Models for Online Content Moderation". In: *Proceedings of the ACM on Human-Computer Interaction*. CSCW2 4. Art. no. 107, pp. 1–28. URL: https://doi.org/10.1145/3415178.

Seering, Joseph, Robert Kraut, and Laura Dabbish (Feb. 2017). "Shaping Pro and Anti-Social Behavior on Twitch Through Moderation and Example-Setting". In: *Proceedings of the 2017 ACM Conference on Computer Supported Cooperative Work and Social Computing*. CSCW '17. New York, NY, USA: Association for Computing Machinery, pp. 111–125. URL: https://doi.org/10.1145/2998181.2998277.

Seering, Joseph, Tony Wang, Jina Yoon, and Geoff Kaufman (July 2019). "Moderator engagement and community development in the age of algorithms". In: *New Media & Society* 21.7, pp. 1417–1443.

Sharma, Rashmini, Gurmeet Singh, and Shavneet Sharma (2021). "Competitors' envy, gamers' pride: An exploration of gamers' divergent behavior". In: *Psychology & Marketing* 38.6, pp. 965–980.

Sharma, Shavneet, Gurmeet Singh, and Rashmini Sharma (2021). "For it is in giving that we receive: Investigating gamers' gifting behaviour in online games". In: *International Journal of Information Management* 60. URL: https://doi.org/10.1016/j.ijinfomgt.2021.102363.

Sicart, Miguel (Aug. 2011). *The Ethics of Computer Games*. The MIT Press.

Silverberg, David (Sept. 2020). "Cheat Codes Helped Turn the Most Devilishly Difficult Video Games Into Something Actually Beatable". In: *Popular Mechanics*. URL: https://www.popularmechanics.com/culture/gaming/a33650224/cheat-code-history/.

Sotamaa, Olli (July 2010). "When the Game Is Not Enough: Motivations and Practices Among Computer Game Modding Culture". In: *Games and Culture* 5.3, pp. 239–255.

St. John, Joel and Nicolas Guigo (2015). "Next Level Cheating and Leveling Up Mitigations". Presented at Blackhat Asia 2015. URL: https://www.blackhat.com/docs/asia-15/materials/asia-15-StJohn-Next-Level-Cheating-And-Leveling-Up-Mitigations.pdf.

Statista (2020). "Number of monthly active users (MAU) of Counter-Strike: Global Offensive (CS:GO) worldwide as of February 2020". In: *Statista*. URL: https://www.statista.com/statistics/808922/csgo-users-number/.

— (2023). "Lifetime unit sales generated by Grand Theft Auto V worldwide as of February 2023". In: *Statista*. https://www.statista.com/statistics/1247955/gta-v-unit-sales-worldwide-total/.

Steamworks Development (Nov. 2016). *Anti-Cheat for Multiplayer Games*. Steam. URL: https://www.youtube.com/watch?v=hI7V60r7Jco.

Stein, Jan-Philipp and Markus Appel (Feb. 2021). "How to deal with researcher harassment in the social sciences". In: *Nature Human Behaviour* 5, pp. 178–180. URL: https://doi.org/10.1038/s41562-020-01011-6.

Steinmacher, Igor, Tayana Conte, Marco Aurélio Gerosa, and David Redmiles (Feb. 2015). "Social Barriers Faced by Newcomers Placing Their First Contribution in Open Source Software Projects". In: *Proceedings of the 18th ACM Conference on Computer Supported Cooperative Work and Social Computing*. CSCW '15. Association for Computing Machinery, pp. 1379–1392. URL: https://doi.org/10.1145/2675133.2675215.

Stewart, Leo Graiden, Ahmer Arif, A. Conrad Nied, Emma S. Spiro, and Kate Starbird (Dec. 2017). "Drawing the Lines of Contention: Networked Frame Contests Within #BlackLivesMatter Discourse". In: *Proceedings of the ACM on Human-Computer Interaction*. CSCW 1. Art. no. 96, pp. 1–23. URL: https://doi.org/10.1145/3134920.

Stunkel, Leanne and Christine Grady (May 2011). "More than the money: A review of the literature examining healthy volunteer motivations". In: *Contemporary Clinical Trials* 32.3, pp. 342–352.

Sweetser, Penelope and Peta Wyeth (July 2005). "GameFlow: A Model for Evaluating Player Enjoyment in Games". In: *Computers in Entertainment*. CIE 3.3, p. 3. URL: https://doi.org/10.1145/1077246.1077253.

Takahashi, Dean (May 2021). "Activision Blizzard's Call of Duty drives 27% Q1 2020 revenue growth to $2.28 billion". In: *VentureBeat*. URL: https://venturebeat.com/2021/05/04/activision-blizzards-call-of-duty-drives-27-q1-2020-revenue-growth-to-2-28-billion/.

Tarantola, Andrew (2019). "A brief history of cheating at video games". In: *Engadget*. URL: https://www.engadget.com/2019-06-15-a-brief-history-of-cheating-at-video-games.html.

Tashakkori, Abbas, Charles Teddlie, and Charles B. Teddlie (June 1998). *Mixed Methodology: Combining Qualitative and Quantitative Approaches*. Vol. 46. SAGE Publications.

TeBlunthuis, Nathan, Charles Kiene, Isabella Brown, Laura (Alia) Levi, Nicole McGinnis, and Benjamin Mako Hill (Apr. 2022). "No Community Can Do Everything: Why People Participate in Similar Online Communities". In: *Proceedings of the ACM on Human-Computer Interaction*. CSCW1 6. Art. no. 61, pp. 1–25. URL: https://doi.org/10.1145/3512908.

Temple, Elizabeth Clare and Rhonda Frances Brown (2011). "A Comparison of Internet-Based Participant Recruitment Methods: Engaging the Hidden Population of Cannabis Users in Research". In: *Journal of Research Practice* 7.2. URL: https://hdl.handle.net/1959.11/20256.

Thacker, Scott and Mark D. Griffiths (2012). "An Exploratory Study of Trolling in Online Video Gaming". In: *International Journal of Cyber Behavior, Psychology and Learning* 2.4, pp. 17–33. URL: https://doi.org/10.4018/ijcbpl.2012100102.

Thiel, Sarah-Kristin and Peter Lyle (June 2019). "Malleable Games – A Literature Review on Communities of Game Modders". In: *Proceedings of the 9th International Conference on Communities & Technologies: Transforming Communities*. C&T '19. New York, NY, USA: Association for Computing Machinery, pp. 198–209. URL: https://doi.org/10.1145/3328320.3328393.

Thomas, Gary (2010). "Doing Case Study: Abduction Not Induction, Phronesis Not Theory". In: *Qualitative Inquiry* 16.7, pp. 575–582. URL: https://doi.org/10.1177/1077800410372601.

Thomas, James and Angela Harden (July 2008). "Methods for the thematic synthesis of qualitative research in systematic reviews". In: *BMC Medical Research Methodology* 8.1. Art. no. 45, pp. 1–10.

Thomsen, Michael (Jan. 2013). "Cheating: Video Games' Moral Imperative". In: *The Fanzine*. URL: http://thefanzine.com/cheating-video-games-moral-imperative/.

Thornton, Louise, Philip J. Batterham, Daniel B. Fassnacht, Frances Kay-Lambkin, Alison L. Calear, and Sally Hunt (May 2016). "Recruiting for health, medical or psychosocial research using Facebook: Systematic review". In: *Internet Interventions* 4, pp. 72–81.

Timmermans, Stefan and Iddo Tavory (2012). "Theory Construction in Qualitative Research: From Grounded Theory to Abductive Analysis". In: *Sociological Theory* 30.3, pp. 167–186. URL: https://doi.org/10.1177/0735275112457914.

Toffler, Alvin (1980). *The Third Wave*. New York: William Morrow and Company, Inc.

Türkay, Selen, Jessica Formosa, Sonam Adinolf, Robert Cuthbert, and Roger Altizer (2020). "See No Evil, Hear No Evil, Speak No Evil: How Collegiate Players Define, Experience and Cope with Toxicity". In: *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems*. CHI '20. Honolulu, HI, USA: Association for Computing Machinery, pp. 1–13. URL: https://doi.org/10.1145/3313831.3376191.

Turner, Fred (Apr. 2006). *From Counterculture to Cyberculture: Stewart Brand, the Whole Earth Network, and the Rise of Digital Utopianism*. University of Chicago Press.

U.S. District Court for the Central District of California (Aug. 2010). *Blizzard Entertainment, Inc. v. Alyson Reeves et al.* 2:09-cv-07621. URL: https://cases.justia.com/federal/district-courts/california/cacdce/2:2009cv07621/456953/34/0.pdf.

— (Aug. 2016). *Riot Games, Inc. v. Stefan Delgado Argote*. 2:16-cv-5871. URL: https://cases.justia.com/federal/district-courts/california/cacdce/2:2016cv05871/655262/45/0.pdf.

— (Jan. 2022). *Activision Publishing, Inc. v. Engineowning UG*. 2:22-cv-00051. URL: https://cases.justia.com/federal/district-courts/california/cacdce/2:2022cv00051/840473/86/0.pdf.

U.S. District Court for the Eastern District of North Carolina Western Division (Oct. 2017). *Epic Games, Inc. v. Charles Vraspir*. 5:17-cv-00512. URL: https://www.polygon.com/2017/10/12/16464750/epic-games-fortnite-cheater-lawsuit.

U.S. District Court for the Southern District of California (Sept. 1998). *Micro Star v. FormGen Inc.* 154 F.3d 1107. URL: https://cyber.harvard.edu/people/tfisher/IP/1998%20Micro%20Star%20Abridged.pdf.

U.S. District Court for the Southern District of New York (Feb. 2019). *Take-Two Interactive Software, Inc. v. Perez*. 1:18-cv-0765. URL: https://dockets.justia.com/docket/new-york/nysdce/1:2018cv07658/499731.

U.S. District Court for the Western District of Washington at Seattle (Aug. 2021). *Bungie, Inc. v. Elite Boss Tech.* 2:21-cv-1112. URL: https://cases.justia.com/federal/district-courts/washington/wawdce/2:2021cv01112/302469/77/0.pdf.

Van den Berg, Harry (2008). "Reanalyzing Qualitative Interviews from Different Angles: The Risk of Decontextualization and Other Problems of Sharing Qualitative Data". In: *Historical Social Research / Historische Sozialforschung* 33.3 (125), pp. 179–192. URL: http://www.jstor.org/stable/20762306.

Vuorre, Matti, David Zendle, Elena Petrovskaya, Nick Ballou, and Andrew K. Przybylski (Nov. 2021). "A Large-Scale Study of Changes to the Quantity, Quality, and Distribution of Video Game Play During a Global Health Pandemic". In: *Technology, Mind, and Behavior* 2.4. URL: https://tmb.apaopen.org/pub/5w1p7ttn.

Wang, Li, Liu Fan, and SungMin Bae (July 2019). "How to persuade an online gamer to give up cheating? Uniting elaboration likelihood model and signaling theory". In: *Computers in Human Behavior* 96, pp. 149–162. URL: https://doi.org/10.1016/j.chb.2019.02.024.

Waycott, Jenny, Cosmin Munteanu, Hilary Davis, Anja Thieme, Wendy Moncur, Roisin McNaney, John Vines, and Stacy Branham (2016). "Ethical Encounters in Human-Computer Interaction". In: *Proceedings of the 2016 CHI Conference Extended Abstracts on Human Factors in Computing Systems*. CHI EA '16. San Jose, CA, USA: Association for Computing Machinery, pp. 3387–3394. URL: https://doi.org/10.1145/2851581.2856498.

Weber, Philip, Thomas Ludwig, Sabrina Brodesser, and Laura Grönewald (May 2021). "'It's a Kind of Art!': Understanding Food Influencers as Influential Content Creators". In: *Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems*. CHI '21. Art. no. 175. Association for Computing Machinery, pp. 1–14. URL: https://doi.org/10.1145/3411764.3445607.

Weld, Galen, Amy X. Zhang, and Tim Althoff (May 2022). "What Makes Online Communities 'Better'? Measuring Values, Consensus, and Conflict across Thousands of Subreddits". In: *Proceedings of the 16th International AAAI Conference on Web and Social Media*. ICWSM '22 16.1, pp. 1121–1132. URL: https://doi.org/10.1609/icwsm.v16i1.19363.

Weller, Marc and Stefan Wolff (Apr. 2005). *Autonomy, Self Governance and Conflict Resolution: Innovative approaches to Institutional Design in Divided Societies*. London: Routledge.

Wellman, Barry and Milena Gulia (2018). "Net-Surfers Don't Ride Alone: Virtual Communities as Communities". In: *Networks In The Global Village*. Ed. by Barry Wellman. Originally published in 1999. New York: Routledge, pp. 331–366.

Wellman, Barry, Janet Salaff, Dimitrina Dimitrova, Laura Garton, Milena Gulia, and Caroline Haythornthwaite (1996). "Computer Networks as Social Networks:

Collaborative Work, Telework, and Virtual Community". In: *Annual Review of Sociology* 22, pp. 213–238.

Wells, Jessica (2018). "Valve bans over 60,000 Steam accounts to smash its previous record". In: *PCGamesN*. URL: https://www.pcgamesn.com/valve/valve-steam-vac-ban-wave.

Wenger, Etienne (2000). "Communities of Practice and Social Learning Systems". In: *Organization* 7.2, pp. 225–246. URL: https://doi.org/10.1177/135050840072002.

Williams, Raymond (Apr. 1983). *Culture and Society: 1780-1950*. 2nd ed. New York: Columbia University Press.

Winge, Theresa (2006). "Costuming the Imagination: Origins of Anime and Manga Cosplay". In: *Mechademia* 1, pp. 65–76. URL: https://doi.org/10.1353/mec.0.0084.

Wohn, Donghee Yvette (May 2019). "Volunteer Moderators in Twitch Micro Communities: How They Get Involved, the Roles They Play, and the Emotional Labor They Experience". In: *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems*. CHI '19. Glasgow, Scotland, UK: Association for Computing Machinery, pp. 1–13. URL: https://doi.org/10.1145/3290605.3300390.

Wu, Yuehua and Vivian Hsueh Hua Chen (Nov. 2013). "A social-cognitive approach to online game cheating". In: *Computers in Human Behavior* 29.6, pp. 2557–2567. URL: https://doi.org/10.1016/j.chb.2013.06.032.

Yan, Jeff and Brian Randell (Oct. 2005a). "A systematic classification of cheating in online games". In: *Proceedings of 4th ACM SIGCOMM Workshop on Network and System Support for Games*. NetGames '05, pp. 1–9. URL: https://doi.org/10.1145/1103599.1103606.

— (Feb. 2005b). *Security in Computer Games: from Pong to Online Poker*. Technical Report Series: CS-TR-889. University of Newcastle upon Tyne. URL: https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=64f770742f210ad7dad30c12fcd2dd41b99fda52.

— (June 2009). "An Investigation of Cheating in Online Games". In: *IEEE Security & Privacy* 7.3, pp. 37–44. URL: https://doi.org/10.1109/MSP.2009.60.

Yee, G., L. Korba, Ronggong Song, and Ying-Chieh Chen (Apr. 2006). "Towards Designing Secure Online Games". In: *Proceedings of the IEEE 20th International Conference on Advanced Information Networking and Applications*. Vol. 1. AINA '06. Vienna, Austria, pp. 44–48. URL: https://doi.org/10.1109/AINA.2006.333.

Yee, Nick (Jan. 2006a). "Motivations for Play in Online Games". In: *Cyberpsychology & Behavior: The Impact of the Internet, Multimedia and Virtual Reality on Behavior and Society* 9.6, pp. 772–775. URL: https://doi.org/10.1089/cpb.2006.9.772.

— (Jan. 2006b). "The Labor of Fun: How Video Games Blur the Boundaries of Work and Play". In: *Games and Culture* 1.1, pp. 68–71. URL: https://doi.org/10.1177/1555412005281819.

Yeshua-Katz, Daphna (2015). "Online Stigma Resistance in the Pro-Ana Community". In: *Qualitative Health Research* 25.10, pp. 1347–1358. URL: https://doi.org/10.1177/1049732315570123.

Yin, Robert K (1999). "Enhancing the quality of case studies in health services research." In: *Health Services Research* 34.5 Pt. 2, pp. 1209–1224.

Yin-Poole, Wesley (Mar. 2020). "Counter-Strike: Global Offensive hits 1m concurrent players for the first time". In: *Eurogamer*. URL:

https://www.eurogamer.net/articles/2020-03-14-counter-strike-global-offensive-hits-1m-concurrent-players-for-the-first-time.

Yu, Bingjie, Joseph Seering, Katta Spiel, and Leon Watts (Apr. 2020). "'Taking Care of a Fruit Tree': Nurturing as a Layer of Concern in Online Community Moderation". In: *Extended Abstracts of the 2020 CHI Conference on Human Factors in Computing Systems*. CHI EA '20. New York, NY, USA: Association for Computing Machinery, pp. 1–9. URL: https://doi.org/10.1145/3334480.3383009.

Yusoff, Amri, Richard Crowder, Lester Gilbert, and Gary Wills (July 2009). "A Conceptual Framework for Serious Games". In: *Proceedings of the 9th IEEE International Conference on Advanced Learning Technologies*. ICALT '09. Riga, Latvia, pp. 21–23. URL: https://doi.org/10.1109/ICALT.2009.19.

Zimmermann, Verena and Karen Renaud (Nov. 2019). "Moving from a 'human-as-problem' to a 'human-as-solution' cybersecurity mindset". In: *International Journal of Human-Computer Studies* 131, pp. 169–187. URL: https://doi.org/10.1016/j.ijhcs.2019.05.005.

Zuo, Xiang, Clayton Gandy, John Skvoretz, and Adriana Iamnitchi (2016). "Bad Apples Spoil the Fun: Quantifying Cheating in Online Gaming". In: *Proceedings of the 10th International AAAI Conference on Web and Social Media*. Vol. 10. ICWSM '16 1, pp. 496–505. URL: https://doi.org/10.1609/icwsm.v10i1.14745.

Zwart, Melissa (Sept. 2009). "Piracy vs Control: Various Models of Virtual World Governance and Their Impact on Player and User Experience". In: *Journal of Virtual Worlds Research* 2.3, pp. 3–16.

Zwart, Melissa and Sal Humphreys (Mar. 2014). "The Lawless Frontier of Deep Space: Code as Law in EVE Online". In: *Cultural Studies Review* 20 (1), pp. 77–99. URL: https://search.informit.org/doi/pdf/10.3316/informit.225934593111540.

Zwiezen, Zack (July 2021). "Man Arrested For Selling Modded Zelda Save Files". In: *Kotaku*. URL: https://kotaku.com/man-arrested-for-selling-modded-zelda-save-files-1847265984.

Video Game References

Blizzard Entertainment (Mar. 31, 1998). *StarCraft*. URL: https://starcraft2.blizzard.com/.

— (Nov. 23, 2004). *World of Warcraft*. URL: https://worldofwarcraft.blizzard.com/.

CCP Games (May 6, 2003). *EVE Online*. URL: https://www.eveonline.com/.

FromSoftware (Mar. 24, 2016). *Dark Souls III*. URL: https://en.bandainamcoent.eu/dark-souls/dark-souls-iii/.

Krafton (Dec. 20, 2017). *PlayerUnknown's Battlegrounds*. URL: https://pubg.com/.

Mojang Studios (Nov. 18, 2011). *Minecraft*. URL: https://www.minecraft.net/.

National Cyber Security Centre (May 3, 2023). *CyberSprinters*. URL: https://www.ncsc.gov.uk/collection/cybersprinters/.

NCSoft (Aug. 28, 2012). *Guild Wars 2*. URL: https://www.guildwars2.com/.

Riot Games (Oct. 27, 2009). *League of Legends*. URL: https://www.leagueoflegends.com/.

Rockstar Games (Oct. 1, 2013). *Grand Theft Auto Online*. URL: https://www.rockstargames.com/gta-online/.

Square Enix (Aug. 27, 2013). *Final Fantasy XIV*. URL: https://www.finalfantasyxiv.com/.

ThreatGEN (Sept. 4, 2019). *ThreatGEN® Red vs. Blue Cybersecurity Gamification*. URL: https://threatgen.com/.

Valve (July 9, 2013). *Dota 2*. URL: https://www.dota2.com/home/.

— (Sept. 23, 2014). *Counter-Strike: Global Offensive*. URL: https://www.counter-strike.net/.