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Thresholds of Interpretation: Interfaces on the Periphery of Gameplay

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Thresholds of Interpretation: Interfaces on the Periphery of Gameplay

DISSERTATION

submitted in partial satisfaction of the requirements
for the degree of

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by

Daniel Lowell Gardner

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DEDICATION

To:
Kelly, who waited long enough…

Mom, who finally gets a doctor child

Bonnie and Tess for all the support along the way, and for meeting with a random anthropology student and convincing me that my work had a place in this department.

This department, who made my third year of applying to PhD programs a charm after all.

To everyone I have played, made, and sold games with over the years.

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ABSTRACT OF THE THESIS

When encountering a new digital game, players can rarely access gameplay without first installing and patching the game, assenting to its End User License Agreement, creating an account, or adjusting the audiovisual and gameplay settings. In this dissertation, I critically examine everyday transactions of authority and value in the design of digital games by calling attention to interfaces and interactions on the periphery of gaming such as authentication, character configuration, and physical interfaces. Interfaces like these dictate accessibility and inclusivity and influence how players interact with games. These interfaces set the stakes for what gameplay can be and demand players conform to implicit and explicit norms in return for access to gameplay. Authentication secures access control while enrolling players in data-driven practices that are increasingly commonplace in computational media. Character configuration can allow players to customize their experience, but limits in the design of customization can limit who games can be about. Physical interfaces facilitate gameplay yet constrict game design practice and constrain physiological accessibility. By moving beyond the lens of efficacy that is commonly applied to these interfaces by UX/UI researchers, I re-frame how these interfaces mediate, manage, enable, and enforce transactions of authority for both players and designers alike.

Chapter 1.

Introduction

Most studies of games examine the core content of the game itself or the experience of players. I examine how player access and experience may be governed by interfaces on the periphery of gameplay that I describe as “periludic,” or surrounding or enclosing gameplay. Players repeatedly encounter periludic interfaces such as authentication, game type or mode selection, character selection or creation, physical interfaces, or digital storefronts and advertisements. These non-play-centered interfaces mediate how players experience gameplay.

1.1. Paratext, peritext, and periludic

I use Gerard Genette as a primary lens for interrogating these periludic interfaces. A literary theorist and structuralist, Genette is concerned with *the form of the material text*. He examines the “form… of a book” (Genette 1997, 1), and its relations to other cultural and material phenomena, rather than any narrative or textual content. Genette describes paratext as the “fringe … between the text and what lies outside it” (1991, 261), and “the threshold” which reinforces and accompanies the text (1991; 1997). To Genette, paratextual “productions” are always produced by the author or publisher and “surround and prolong [the text], precisely in order to present it, in the usual sense of the verb, but also in its strongest meaning: to make it present, to assure its presence in the world, its ‘reception’ and its consumption” (1991, 261). Genette asks, “[R]educed to its text alone and without the help of any instructions for use, how would we read Joyce’s *Ulysses* if it were not called *Ulysses*?” (1991, 262). If *Ulysses* were not supported by a cover, table of contents, and page numbers, reading might be *possible,* but certainly less efficient, effective, and pleasurable. Without a title screen, character and stage selection, and a controller of some kind, how effectively or pleasurably could we play digital games?

This dissertation attempts to do for digital games much of what Genette did for books. I re-mediate a neglected aspect of Genette’s paratext to chart elements of how we engage with digital games and media. I build an analytical lens for observing periludic interfaces and better examining the outcomes mediated by them, enforced by them, and built into them.

Genette defines two types of paratext: those that are functional components materially attached to the text, and those that are not.

Peritext is "around the text, *in the space of the same volume*" (Genette 1991, 263; emphasis added), an essential component of the material artifact itself. For example, a book's cover, table of contents, page numbers, illustrations, and introductions are all peritext. Genette argues for the inability of a text to *exist* in the world without these elements. The collection of these features materializes and contextualizes narrative texts, allowing their contents to be identified, differentiated from each other, or even read. Genette describes peritext as the "most typical" form of paratext (1991, 263), and is his primary focus.

Epitext refers to cultural knowledge, promotional materials, and other elements *beyond* the material textual artifact. How contemporary games and media scholars have used and evolved the broader concept of "paratext" is more in line with Genette's epitext. For example, Lunenfeld (1999), Consalvo (2009), Gray (2010), and others have adapted Genette's notion of paratext to include broader elements of the experience of media and the productions of readers, watchers, and players.

As games and narrative scholar Daniel Dunne has noted, the emphasis in media and games scholarship on the study of epitexts, while labeling them paratexts, seems to obscure both the original distinction between Genette's paratext types and the presence of peritext in contemporary scholarship (2014, 2016).

To Genette, "the most essential of the paratext's properties … is functionality" (1997, 401), by which he means that paratext—and especially peritext—should either lead the reader to the text, or aide in their reading in some direct way (e.g., how page numbers help a reader keep their place). Genette references Phillipe Lejeuene, who, discussing the art of autobiography, describes elements of the printed word like those Genette analyzes (e.g. title, preface) as "the fringe of the printed text which, in reality, controls the whole reading," as written in both Marie Maclean and Jane Lewin's translations of Genette (1997, 1997)[1]. Genette is occupied with examining the components of this fringe and describes and analyzes a list of elements we might find there (e.g. cover art, illustrations, and page numeration), while evolving Lejuene's observation and providing these elements a name in paratext.

Literary scholar Marie Maclean, who originally translated Genette's work into English, emphasizes the way that peritexts are intended to communicate directly to the reader in a different way than texts. She explains how the speech and words that make up texts tend to serve the setting,

---

[1] Although I could not find a translation of Lejeune in English, this quote is present as written in two translated versions of Genette and Bo Ruberg was kind enough to read the original French source and summarize. Although Lejeune is discussing the art of autobiography, he makes this brief aside that Genette builds on in his book. I have included it as it concisely and eloquently summarizes much of Genette's central argument upon which I build.

narrative, or argument of the text itself. Maclean points out how any speech, words, or numbers comprising Genette's paratexts tend to serve the reading, or use, of the material object the text is embedded within. In these paratexts, "the author, the editor, or the prefacer are … informing, persuading, advising, or indeed exhorting and commanding the reader" (Maclean 1991, 274). For a peritextual example, tables of contents tell the reader where in the book to find a specific chapter. In digital games, level select screens similarly direct players to specific sections of games. Maclean effectively describes how peritexts improve or maintain the usability of texts as books.

Periludic interfaces such as level select or the three examples I focus on in this dissertation exist on the threshold of digital games much like their book-bound peritextual predecessors. Periludic interfaces similarly improve or maintain the usability of games as game software. I have chosen to differentiate periludic interfaces from peritexts, however, because—unlike book-bound peritext—periludic interfaces attached to games can react and adapt to players in ways their comparably passive predecessors cannot. Publishers can update periludic interfaces in games over time in ways they cannot with peritexts and a printed book. Players can configure their characters, controls, audio and visual settings in ways readers cannot in books. The computing power periludic interfaces are built upon makes it possible to continually maintain and renew interactions and relationships between players and publishers in ways their predecessors cannot.

While Genette adhered to a strict structural argument and stopped short of deeper socio-political observations implicated by his analysis, I am concerned with the broader impacts of periludic interfaces. A periludic lens highlights how elements of games such as access, characters, and gameplay itself are not simply *characteristics* of digital games, they are *outcomes* of observable interfaces that support digital games and represent the pragmatics, strategies, and values of their designers. Studying periludic interfaces tells us how these more familiar elements of games are made or made to matter in games and the lives of players.

1.2. Empirical Cases

In this dissertation, I analyze periludic interfaces through the empirical study of:

- **Authentication interfaces** that obtain legal assent to licensing documentation and enforce identity verification and access control. (e.g., Figure 1.1 and Figure 1.2)
- **Character configuration interfaces** that assign, provide, or allow players to select or create the virtual bodies they will enact in-game. (e.g., Figure 1.3)
- **Physical interfaces** in the form of controllers, that permit platform and in-game navigation. (e.g, Figure 1.4)

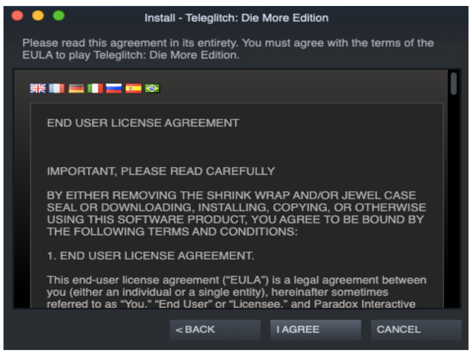

Figure 1.1: Assent to End User Licence Agreement for game hosted by Steam.

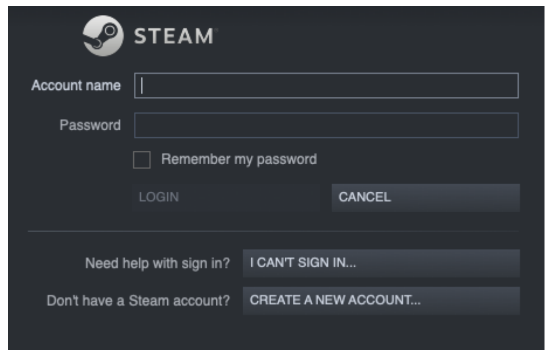

Figure 1.2: Login and identity verification interface for Steam

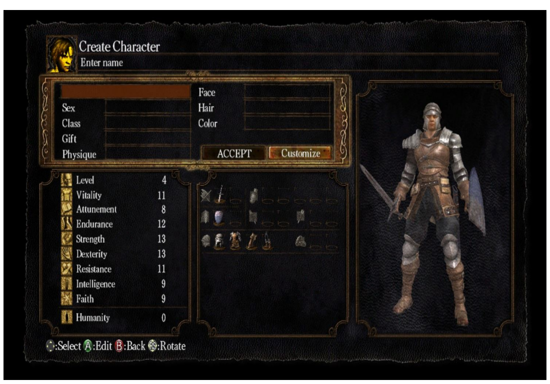

Figure 1.3: Character configuration interface the game Dark Souls (FromSoftware 2012)

Figure 1.4: Controller for original Nintendo Entertainment System

Although these periludic interfaces are designed for positive, useful purposes, they can often produce unintended and sometimes negative consequences. Periludic interfaces can act as a *lever,* an intermediary means of applying force, upon players to produce sometimes unexpected and inequitable outcomes. For example, these interfaces may protect the integrity of the games we play, grant the opportunity for players to create their own main characters and expand access to new mechanics and ways of playing. At the same time however, they foreclose on anonymous or private gameplay, create limitations on what kind of characters are put into play, and introduce challenges to physical accessibility.

Foregrounding periludic interfaces is essential for investigating how different outcomes materialize in the design of digital games and in the experiences of players. These interfaces set the stakes for what gameplay can be and demand players conform to implicit and explicit norms in return for access to gameplay. They demand information on players and submission to assumptions about embodied performance and physiological capacity *in return for* access and authorization, in-game representation, and basic gameplay progress. Periludic interfaces are where player accessibility, consent, privacy, surveillance, algorithmic content control, and the ability to self-represent in games are established or enforced. Each of these interfaces is an example of an observable element that exists *between* more familiar aspects of gaming more commonly observed by games scholars and give us a more complete picture of the relationships between players, publishers, platforms, and games.

Authentication interfaces exist across digital media, platforms, and technologies to establish ownership, protect access, and maintain privacy. However, authentication as a means of access control in digital games often enables and enforces opaque and sometimes inequitable relationships between players and publishers. How authentication is leveraged by publishers to make players legible for enforcing legal regimes (Burk 2010), or for the purposes of large-scale data collection remains largely understudied. Foregrounding authentication highlights how it fundamentally alters the activity of gaming by requiring players to ask publishers and platforms for permission to access every-day gameplay and to submit to surveillance and algorithmic influence.

Requiring players to conform to explicitly defined norms and expectations is as much a part of the access control authentication provides as identify verification. Authentication inherently prevents anonymous or private gameplay by verifying player identities, or at least persistent pseudonymity, providing a consistent label and index for all of a player's game-related activities and making privacy more vulnerable rather than more secure. Each time a player authenticates before accessing gameplay, it allows their activity to be linked to previous sessions, making persistent data collection and analytics more reliable. Detailed data collection is often leveraged to constrain user experience, for better and worse. For example, algorithms are applied to player data to match players in-game with similarly skilled opponents in competitive gameplay or to optimally filter digital store spaces in and out of games to persuade players to spend their money more efficiently. Although players may feel ambivalent toward these outcomes, or even find them acceptable or commonplace in our current digital climate, the lack of choice in the matter is an issue worth examining.

Character configuration interfaces constrain who digital games can be about. I use *character configuration* to refer to the ways characters are figured and re-figured through design, interface, and player input as players take on the roles of characters in games. The default characters digital games provide players and the limitations in available customization, however, often present homogenous choices that do not reflect the diversity of players. This lack of diverse characters has been observed by scholars such as Williams et al. (2009), Lynch et al. (2016), Passmore et al. (2017), and Gardner and Tanenbaum (2018), who all observe in-game representation in large samples of digital games. This lack of diverse representation disproportionately affects women players and players of color who are more often left without a choice to play as a character that at least shares their demographics, if they wish to play digital games at all (Shaw 2014; Passmore, Birk, and Mandryk 2018; Gardner and Tanenbaum 2018). But, this lack of diversity is more than simply a feature of digital games, it is the direct outcome of character configuration interfaces, as McArthur, Teather, and Jenson (2015) and Gardner and Tanenbaum (2018) have pointed out. Drawing attention to these interfaces elevates the activity and labor players conduct within them, and can provide a frame for articulating specific, actionable, critiques of publisher priorities and game design related to the sorts of performative identities permitted in games.

Physical interfaces provide players a means to enact their will during gameplay and have co-evolved with shifts in technology and game design over time. However, they also become a barrier to players with physiological capacities outside those expected by their manufacturer (Bierre et al. 2005; Janine et al. 2007; Yuan, Folmer, and Harris 2011; Boluk and LeMieux 2017). The characteristics of physical interfaces can be used to chart trends in game mechanics such as movement and camera control, *and* to observe pervading assumptions about the abilities of those who play digital games. Controllers, mice and keyboards, dance pads, joysticks, guitars, and light guns all expect a certain normative player with two hands or two feet, and/or a certain precision of coordination. As will become clearer in chapter six, Commercial interfaces that support non-normative assumptions of physiological ability are infrequent.

Chapter 2.

Related Work

This chapter outlines the central theoretical and empirical scholarship upon which I build my own. I begin with a deeper analysis of Genette's paratext, before linking it to Derrida's theory of the parergon—that which is beside the ergon, the work. I then discuss work that has built on Genette's analysis in contemporary game and media scholarship and empirical work that calls attention to periludic interfaces in games, even when they may not be the focus of a given source or use the term.

2.1. Genette

Genette is the most immediate origin of the use of paratext in media and game scholarship. The original French title of the book in which he describes his paratext is *Seuils* (Genette 2002*),* literally doorstep or threshold. The cover of the French 2002 reprint is even a small girl approaching a doorway (Figure 2.1). Genette defines his use of paratext and its component parts (peritext and epitext), before spending a chapter each on several examples of paratext in books.

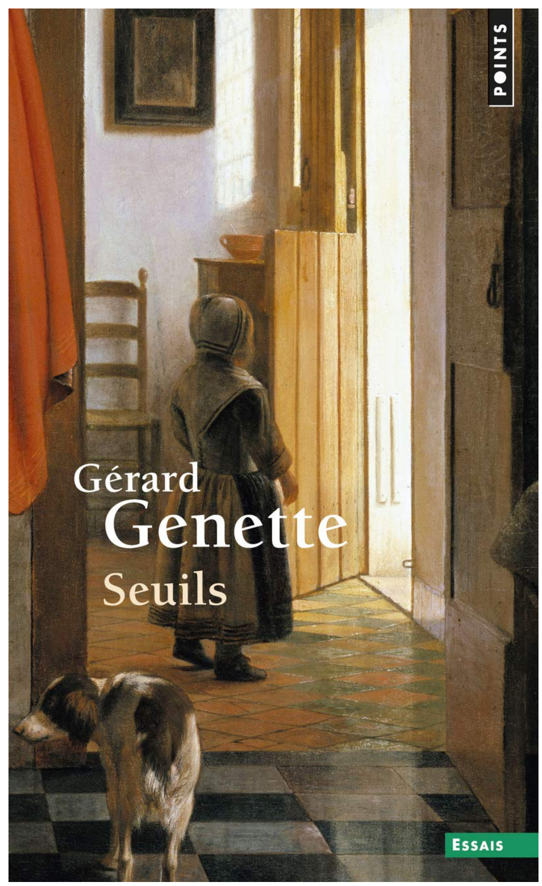

Figure 2.1: Cover of reprint of Genette's Seuils (Genette, 2002).

Para- can mean beside, beyond, or auxiliary to. In *Seuils/Paratext,* Genette is only initially concerned with the text insofar as it is "a more or less lengthy sequence of verbal utterances more or less containing meaning" (1991, 261), before spending the duration of the book examining peritext and epitext. Genette simultaneously highlights paratext and warns his readers against too much focus on it. Genette argues against a separate theory or study of paratext and rather that paratext is a part of studying texts, writing:

> "The paratext is only an assistant, only an accessory of the text. And, if the text without its paratext is sometimes like an elephant without a mahout[[2]], a power disabled, the paratext without its text is a mahout without an elephant, a silly show. Consequently the discourse on the paratext must never forget that it bears on a discourse that bears on a discourse, and that the meaning of its object depends on the object of its meaning, which is yet another meaning. A threshold exists to be crossed." (Genette 1997, 410).

To Genette, "the most essential of the paratext's properties … is functionality. Whatever aesthetic intention may come into play as well, the main issue for the paratext is not to "look nice" around the text but rather to ensure for the text a destiny consistent with the author's purpose" (1997, 407). Consistent to the French title, and cover above (Figure 2.1), Genette describes paratext as providing "an airlock that helps the reader pass without too much … difficulty from one world to another, a sometimes delicate operation, especially when the second world is a fictional one" (1997, 408). Genette's paratext, especially peritext, does not *only* surround and frame the text, it guides the reader's transition into the text and any world it creates in a purposeful and meaningful way

Genette argues the functional and dependent nature of paratexts prevent a general "theory" of *the* paratext, as paratext is always "heteronomous, auxiliary, … devoted to the service of … the text" (1991, 269). That is, for example, while prefaces can all be understood to similarly serve texts as the same type of paratext, the content, purpose, and effects will not be consistent. Prefaces may even vary in their role and impact from edition to edition of the same text, should the prefacer change. To Genette, prefaces for different texts are incomparable as their value and nature can only be evaluated in relation to the texts to which they are attached.

Genette argues "the functions of the paratext constitute a very empirical and diverse object, which must be derived in an inductive way … The only meaningful regularities that one can introduce into this apparent contingence consist in establishing these relations of dependency between function and statuses" (1991, 270). I use Genette's model here to discuss periludic *types,* by discussing recurrent themes and the consistent functions, stakes, and states, enabled or enforced by the periludic elements I describe in each following chapter

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[2] An elephant rider, trainer, and keeper who is often bound to an elephant for life (Mahout | elephant trainer n.d.).

2.2. Derrida

Jacques Derrida also analyzes the periphery of media in his "parergon" which he describes as a threshold and frame "against, beside and above and beyond the *ergon*, the work accomplished, the accomplishment of the work. But [the parergon] is not incidental; it is connected to and cooperates in its operation from the outside" (Derrida 1979, 20). Derrida uses the frame of a painting and the "incomprehensibility of the border" it creates as a central example (1979, 24). He describes the complex "thickness" of parerga as they constitute a border between the work and the world. With a painting for example, Parerga have an inner border between themselves and the painting and an outer border between themselves and the wall on which the painting (and frame) hangs. "The *parergon* is distinguished from both the *ergon* (the work) and the milieu" (Derrida 1979, 24, emphasis in original).

Derrida describes similar examples with sculptures and palace architecture. For sculptures, he discusses the drapery sculpted over the nude, "au naturel" bodies (1979, 22): "The drapery on statues, a privileged example, would function as *parergon*, as ornamentation. This means … precisely what is not interior or intrinsic … in the sense of an integral component … to complete representation of the object … but which belongs to it only in an extrinsic fashion … as a surplus, an addition, an adjunct" (Derrida 1979, 21). Derrida troubles his own characterization and whether *all* drapery, or sculpted accessories, such as a knife or necklace, or even a transparent drape are parerga? He uses these examples to debate without resolution where drapery may start and end and so where the parergon may start or end. Derrida only concludes that "the *parergon* inscribes something extra, *exterior* to the specific field … but whose transcendent exteriority touches, plays with, brushes, rubs, or presses against the limit" of the ergon, the work (1979, 21, emphasis in original).

Derrida describes the physical site, the square, the museum, or other surroundings as completely detached from the work and thus beyond the parergon. The frame or drapery, however, are parerga because of their "quasidetachment" (Derrida 1979). These elements are separate, yet without them a "lack within the work would appear or, what amounts to the same, would not appear. It is not simply their exteriority that constitutes them as *parerga*, but the internal structural link by which they are inseparable from a lack within the *ergon* (Derrida 1979, 24, emphasis in original). This "lack" may not be a flaw and it may not be purely aesthetic; it may be a lack that is only made clear because of the presence of the parergon. A painting may lack the mountings required to be hung without being damaged, frames provide a means to do so.

2.3. Paratext, parergon, and periludic

This discussion of quasi-detached exteriority is where Derrida and Genette most explicitly overlap. Genette and Derrida are similarly describing media as enclosed within an accompaniment of paradoxically separate and inseparable elements which surround and present a primary subject of creative intent.

Derrida likens the parergon to a necessary prosthesis so that the ergon, “which cannot stand alone, which cannot be established in its process, is moved forward” (1979, 37). He continues, “framing always sustains and contains that which, by itself, collapses forthwith” (Derrida 1979, 37). The painting is held within the frame, and upon the wall by the frame. To Derrida, the ergon is only made possible, or put “to its proper place” (1979, 39), by the parergon. To Genette, the text is made present, material, and consumable only by the paratext.

Derrida describes how the parergon “has something like the status of a philosophical concept” (1979, 20), that might allow it to “be carried over, either *intact* or *consistently* deformed, reformed, to other fields, where new contents may be submitted to it” (1979, 20, emphasis in original), such as elements attached to new mediums such as digital games.

Genette and Derrida similarly pivot at the end of their arguments about these frames or thresholds, to say that *because* these elements simply attach to, augment, or support, focus should remain on the ergon or the text. After all his analysis, Derrida goes so far as to write “there is no natural frame. There *is* framing, but the frame *does not exist*” (1979, 39, emphasis in original). To Derrida, the frame makes real but is not real, creating a seeming paradox. To Derrida, the parergon’s form, its function, “has traditionally been determined not by distinguishing itself, but by disappearing, sinking in, obliterating itself, dissolving just as it expends its greatest energy” (1979, 26). That is, the frame fades away once the viewer recognizes the painting within it.

This prefacing of the ergon undercuts the significance of Genette and Derrida’s work even in their own contexts. Prioritizing the ergon/text and the disappearing act of peripheral, framing elements aligns with common practices in HCI and interface design I will address in a later chapter. However, denying the reality of these peripheral elements forecloses on emergent activities that center on them and dismisses the possibility of the influence they can exert beyond their outer border that later scholars in media and game studies identify.

2.4. More recent adaptations on the theme

Peter Lunenfeld and Mia Consalvo are two influential scholars that have shaped how we talk about paratext in games, and who have broadened the role of paratext in contemporary game and media scholarship.

Lunenfeld builds on Genette directly, applying the concept of paratext to a wider, digital, domain (1999). Lunenfeld questions the rigid application of paratext only to books and begins to question the exclusive ability of authors and publishers to create it. He questions even the boundary between text and paratext Genette suggests. Unfortunately, Lunenfeld is primarily focused on epitexts, while mostly using the word paratext to describe them. He builds on Genette while neglecting the distinctions Genette made about function and paratext types. Although his analysis is constructive, this semantic conflation of the broader category of paratext and sub-category of epitext contributes to an obscuring of peritext that persists in more recent media and game scholarship.

In her book, *Cheating: Gaining Advantage in Videogames* (2009). Mia Consalvo redefines Genette's paratext as "all of the elements surrounding a text that help structure it and give it meaning" (2009, 21). Perhaps because her definition of paratext builds on Genette through Lunenfeld, Consalvo also tends to overlook the differentiation between *types* of paratext: those that are functional components materially attached to the text, and those that are not. She considers how various strategies of exploitation or cheating through external knowledge, secret codes, or mechanical devices (e.g. Gamesharks) may alter gameplay. Consalvo expands paratext to include the knowledge produced and disseminated through player-communities, which directly and productively counters Genette's author-knows-best attitude. While some of the activities she describes might be considered peritext, she largely examines knowledge production and resources that are epitextual, while labeling them all paratext. This is not inaccurate to Genette's paratext, but it is imprecise. Like Lunenfeld, Consalvo contributes to an obscuring of peritext as both concept and object of study.

Games and narrative scholar Daniel Dunne argues Lunenfeld and Consalvo's use of paratext "overlooks the peritextual possibilities that can occur within video game studies" (2016, 281). He describes how Lunenfeld and Consalvo are central to why the common contemporary use of "paratext can be seen as epitextually focused" (Dunne 2016, 279). Dunne examines how Lunenfeld has shaped the way that some scholars have focused on advertisements, trailers, or other digitally enabled multi-media aspects of the way texts, or media products are presented. He argues that

Consalvo's focus on "metatextual readings" (Dunne 2016, 278)—the community generated knowledge about how to play a game or how to play it a certain way—rightfully encourages other scholars to "examine an audience's relationship with a text" in new ways (Dunne 2016, 279). However, Dunne continues, this neglect of peritext in favor of epitext continues to inflect the contemporary study of paratext in game studies.

New media scholar Alexander Galloway seems to apply Genette in a way I suggest when he describes the "indecisiveness" of "intrafaces" (2006). However, his analysis of intrafaces is about interfaces "within the aesthetic" (Galloway 2006, 40), which is a decisive position *within* media that he applies to Heads-up Displays (HUDs), and other in-game interfaces. While some of Galloway's analysis is aligned with my own, my central concern are the interfaces that are *not* decisively *within* media.

New media and games scholar Kristine Jørgensen comes the closest to a general periludic approach in games that I am aware of (2013). She emphasizes how interfaces on the periphery of gameplay are "necessary for interaction with the game and [enable] the player to act meanginfully with respect to the game rules" (Jørgensen 2013, 2). Although the in-game interfaces such as HUDs that she focuses on may be periludic, she does not remediate Genette. In addition, I am most immediately concerned how interfaces that are less decisive components of gameplay direct or dictate the gameplay experience.

There are some contemporary literary scholars who considered how Genette translates to digital contexts. Comparative Literature scholar and narratologist Ellen McCraken and English scholar and digital humanist Patrick Smyth remediate paratext *and* peritext as lenses to examine the ways reader interact with ebooks. McCraken uses peritext to examine how the kindle platform influences and directs the activity of reading (2013). Smyth outlines a fairly direct translation of how specific characteristics of Genette's book-bound peritext materialize in ebooks more generally (2014), not unlike in some ways, the way this dissertation does for digital games.

2.5. Empirically periludic

In this section, I present games research that empirically addresses periludic elements in games. Although peritext is largely absent from the vernacular and focus of contemporary game studies and even these examples, the methods and analysis in this research still pays notable attention to elements I would describe as periludic. I have organized this section according to which of my primary periludic interface examples the research most closely aligns: Authentication, character selection/creation, physical interfaces, and microtransactions.

2.5.1. Authentication

Authenticationcan be defined as “the process of establishing confidence in the truth of some claim” (National Research Council 2003, 19). This definition is most commonly applied to applications, game software, or platforms verifying the identity of players or users through the use of interfaces that confirm “an identifier [that] points to an individual” (National Research Council 2003, 42), generally in the form of username and password, in return for access. In this case, publishers and platforms authenticate player claims to identity. However, the interfaces that acquire assent to EULAs and TOS also serve as authentication. In this case, players authenticate publisher and platform claims to rights and demands on player behavior.

I am aware of no scholars that have investigated the role of any form of authentication as it relates to games, beyond those who have analyzed the simple functional security of forms of identity verification and similar that may happen to be attached to games (e.g., Assiotis and Tzanov 2006; Dotan 2010; GauthierDickey et al. 2004). I am aware of no scholars that have investigated how the addition of pervasive authentication, authorization, identify verification, and other security measurements as an everyday condition of access has affected the recreation of digital gaming.

In his studies of Terms of Service (TOS), Law scholar Dan Burk comes the closest to identifying the direct implications of the security and enforcement mechanisms now standard in digital gaming. The documents and rules Burk examines are not periludic, but the interfaces through which these documents are most commonly presented to players and generally enforced in games are. These *epitextual* TOS are where certain outcomes of the periludic authentication interfaces attached to games are dictated. Burk discusses how “technical design may be deployed to control behavior,” specifically how copyright and TOS can be utilized as a “legal regime” over players (Burk 2010). Burk is concerned with how the rules of these documents are formed, and how they define the relationships between players and games, as well as players and publishers. His analysis adds weight to the study of the interfaces that enforce these rules, and legal outcomes

2.5.2. Character configuration

All of the early ethnographies of Massively Multiplayer Online (MMO) games contain some form of the classic tale of arriving in the field, notably in the ethnographies by T.L. Taylor (2006), Bonnie Nardi (2009), and Celia Pearce (2009). These scholars' arrival stories all contain a description of an experience with periludic character creation. Each of these scholars discuss embodiment within virtual worlds in some form, and each must *place* themselves and the virtual bodies they will put into play within these worlds. And while the narrative of their observations and analysis move on to deeper cultural and personal experiences in and out of their respective virtual sites, they all signal—to a periludic reading—the importance of these interfaces when players *arrive* in gameworlds.

Taylor describes how her process of "becoming a gnome" would influence and alter how she experienced the gameworld she studied. Narratively, Taylor treats her choice to play as a gnome necromancer as priori to gameplay. She describes how her later experiences playing *as* a gnome "both benefited and [were] hindered by [her choice] to *become* a gnome when she first sat down to make a character (Taylor 2006, 12). When Taylor describes how her choices in character creation "structured [her] game play sessions" (2006, 15), she is aligned with a periludic lens. She continues that "how [players] choose to represent [themselves] has meaningful implications psychologically and socially," and that users/players are often aware of "the ways their avatar shaped the kinds of conversations or interactions they had" (Taylor 2006, 12).

Nardi provides only a very short description of creating her character "Innikka (a pseudonym)" (2009, 9). At the very outset of the first chapter of her book, Nardi describes her first tentative steps into the "fairy tale" gameworld of World of Warcraft (WoW), paying special attention to the sort of socio-ecological mechanics of movement, monsters, and other players she finds there. However, even before this entrance, in the prologue of her book, she very briefly describes her son helping her to "create an animated character with which to adventure in the three-dimensional virtual world" (Nardi 2009, 4). Through a periludic lens, character creation becomes a threshold at the edge of gameplay that Nardi is unprepared to cross on her own: "When [she] sat down with *World of Warcraft,* [she] had no idea what to do" (2009, 4). Because Nardi was not as fluent in the "basic game semantics" as her son at the time (2009, 4), she ran into trouble *before* arriving at the "enter world" button that grants access to WoW's virtual world and the gameplay within it. Nardi's use of semantics recalls Genette's description of peritext often consisting of text that directed at the read and representing the conventions of the medium of books. Here, Nardi is unfamiliar with the conventions of the interfaces that are *presenting* WoW to her, so navigating a periludic interface to acquire her virtual body and access gameplay becomes a challenge.

Pearce describes her time with the "Uru," a community whose story includes multiple embodied arrivals in—and traversals between—virtual worlds (2009). Pearce describes these "refugees" attempting to find a new home after the destruction of the virtual "homeland," a canceled MMO from which they take their name. The Uru move first to discussion boards before establishing colonies in various other games and virtual worlds while struggling to recreate, even in part, their homeland in these new settings. While Pearce's analysis centers on the translations of community and cultural artifacts between virtual worlds, she still pays special attention to how the Uru adapted and enacted their personal performances across these worlds, while attempting to maintain some continuity. Pearce perhaps illustrates this line of analysis best when describing her own multiple embodiments, becomings, and arrivals in her multi-sited field, as visually represented in Figure 2.2, containing all of Celia Pearce's and Artemisia's avatars including her physical one. Each virtual setting the Uru find themselves has its own systematic limitations and affordances that constrain character configuration and the sorts of embodied performances that may be translated into or between these proprietary worlds.

Figure 2.2: Celia Pearce and Artemisia's avatars. Updated version of what appears in her book, pulled from her website with permission (Pearce n.d.).

The functional aspects publisher prioritize and the limitations they impose in the creation of their worlds and character configuration interfaces shape the possibilities of the "emergent" play Pearce describes in *Communities of Play* (2009). Through a periludic lens, the outcomes Pearce analyzes highlight how configuration interfaces can shape the performative possibilities and enactment of identity *in* virtual worlds and the literal identity work, labor, and effort required to maintain or curate a persistent identity *between* various worlds.

An early and powerful example of this sort of language about becoming, putting on, or "donning" virtual performances, even if primarily in text form comes from Lisa Nakamura in her study of Multi-User Dungeons (MUDs) (1995; 2002). In an ethnographic account of early shared online role-playing communities, Nakamura introduces the idea of "identity tourism" to describe a form of “racial play” she observed in mostly white players taking on performances other than their own—most commonly a stereotypical “assianness” (1995, 1, 3, 6).Nakamura highlights the mediation of these performances by describing how they are produced through “keystrokes and mouse-clicks” (1995, 1). In Nakamura’s later book, *Cybertypes* (2002), she further hyper-mediates how identity performance may occur in a variety of digital and online spaces. A key insight she introduces is the concept of “menu-driven identities” to describe the ways that “interface design features … force reductive, often archaic means of defining race upon the user,” often oversimplifying, stereotyping, or excluding complex, intersectional, or marginalized identities (Nakamura 2002, 101).

While Nakamura’s observations are more concerned with general online spaces, chat rooms, and early forms of disembodied digital online play, her analysis is all the more applicable to interfaces that dictate the visual constraints of playable characters in games, that define race and gender for playable characters. Nakamura’s analysis foregrounds the interfaces that mediate performance, and thus representation, in these shared online spaces.

Performance can have two meanings. In this dissertation, I try to avoid using performance in a mechanical sense. I primarily use performance in the tradition of philosopher and critical theorist Judith Butler (1990) and critical gender and queer scholar Eve Sedgewick (2002) to refer to the sometimes verbal, sometimes visual or behavioral cues used to identify ourselves and others as members of certain groups.

To move on from ethnographic account while continuing the theme of identity curation across different game worlds via character configuration, I turn to Crenshaw and Nardi’s analysis of avatar naming practices (2014). Crenshaw and Nardi describe the rich, well-articulated, and far-reaching relationships some of their participants have with the names they choose for the characters they create in games. Crenshaw and Nardi describe how a variety of textual and epitextual material, cultural influences, and other aspects of a player’s life can come together in their character naming choices. Although players may draw the meaning of these names from identity work that occurs in or out of games, their ability to successfully assign, maintain, or express that meaning in new virtual settings depends on avatar-naming interfaces that help or hinder translation into new games and gameworlds.

This article by Crenshaw and Nardi is an example of one kind of work a periludic lens encourages. While they are explicitly studying player character or avatar names *in games,* they do not actually discuss *playing* games at any point in their article. They are focused on the practice of naming and the naming functions that allow or challenge their participants' ability to curate a facet of their identity persistently or consistently between different games. The translational, and transactional, aspect of the naming practice is made particularly clear when participants describe being unable to obtain their name of choice, either because it is already taken, or cannot be used for some other reason (Crenshaw and Nardi 2014, 2–3). A periludic lens highlights how Crenshaw and Nardi are describing a threshold to games that dictates whether players are permitted to go by a name they wish or not within gameworlds, potentially compromising how they express themselves in order to play at all.

McArthur, Teather, and Jenson describe their "Avatar Affordances Framework" as a tool for comparing different character or avatar creation interfaces (2015). Although like Crenshaw and Nardi, they do not use the term periludic, this article describes another example of one kid of research a periludic lens encourages. McArthur, Teather, and Jenson are explicitly unconcerned with directly analyzing in-game characters or avatars, in favor of interrogating the design and affordances of a periludic interface. They are keenly and explicitly aware that what they are studying is *not* in-game, even though these interfaces control and influence what occurs there. McArthur, Teather, and Jenson argue that the "hegemonic" values that may materialize as limitations in character configuration interfaces may exclude certain embodied performances in games, and so players' "ability to represent themselves" (2015, 232).Their framework provides the means for charting the capacities for representation, rather than actual representation, within periludic character configuration interfaces.

Although other scholars have examined game characters with a paratextual lens, they often take an epitextual approach. Even Burgess et al. who use gaming magazines and game box cover art to examine gender and sexuality in games (Burgess et al. 2011; Burgess, Stermer, and Burgess 2007), and Nguyen et al. look at how players perceive race on game covers (2020),are challenging examples despite looking at the covers that come with games. Game covers occupy a complicated paratextual category. To Genette, a book's cover is peritext as it exists as part of the material object. It becomes less clear whether physical box art or the digital stand-ins used by distribution platforms are similarly part of a digital game, and whether they are peritext or epitext. Untangling this conundrum is beyond the scope of this dissertation

2.5.3. Physical Interfaces

There are several studies that have considered the role of controllers in games around topics of skill and performance, fluency, efficiency, efficacy, or practical design (e.g., Squire 2008; Gerling, Klauser, and Niesenhaus 2011; Birk and Mandryk 2013), or accessibility (Bierre et al. 2005; Glinert 2008; Yuan, Folmer, and Harris 2011). While in some cases, the objective of these studies may be somewhat periludic, none address paratext in any form. These studies are generally ambivalent to in-game content in their analysis of general use rather than being concerned with how controllers may have a relationship with, or influence, games. There are some important examples of researchers exploring the role of controllers. Researcher and artist Mary Flanagan's "Giant Joystick" installation critically addresses how re-shaping the interfaces we use to play games reshapes our relationships to those games (2006, 2009). More recently, some scholars have started to critically examine how game control and controllers may influence players, games and game design. Bagnall (2017), Sicart (2017), Marcotte (2018), and Blomberg (2018) all theorize ways controllers can influence the activity of gaming beyond being simple physical input devices. Each provides analysis that either encourages a periludic reading, or aligns with a periludic evaluation of the role of controllers in the activity of gaming.

Gregory Bagnall is possibly the first to clearly articulate in writing the importance of critically analyzing controllers: "As the prime navigational mechanism and explorative tool of nearly all console games, we must not underestimate the importance of game controllers" (2018). He argues that controllers "figure as a kind of politic as much as game stories and mechanics do" (2017, 135). Although his contribution is more a call-to-action that identifies an important gap in scholarship regarding the relationship controllers and games have rather than deep analysis, other scholars seem to pick up where he leaves off.

Miguel Sicart (2017) and Jess Marcotte (2018)appear to be writing responses directly to Bagnall. Each argue, citing him, for a queering of the analysis—and design—of controllers. Sicart argues that "the architecture of control[lers] is one of limits, of predesigned possible actions" (2017). He describes how controllers constrain the actions that may be taken in-game or designed into a game.

Marcotte provides more extensive analysis, more detailed examples, and greater implications for design (2018). They argue that alternative and queer controls and controllers have the power to generate alternative, critical, and reflective game design that encourages designers and players alike to question, reflect on, and push back against a status quo. Marcotte describes controllers as "the *peripherals* which players use as extensions of their bodies and minds to operate videogames"

(2018, emphasis mine). Marcotte invokes peripheral as the common and commercial categorical descriptor for controllers and gaming accessories and their use. They draw attention to how physical and logical methods of “control” mediate how players may manifest in-game agencies. Marcotte describes how the limits that controllers create or impose shape how players can express themselves and constrain in fundamental ways the sorts of games that *can* be designed.

Johan Blomberg examines controllers from a different angle but to a similar effect as Marcotte, and with equal concern over the usual disregard of the influence of controllers beyond their role as technical input devices in broader game studies (2018). Blomberg applies semiotics and phenomenology to dissect the mediating role of the controller in games and to examine their essential place *in-between* players and gameplay. Blomberg questions the immediacy of digital gameplay by arguing that the “focus on the player already having a functionally competent ability to play” takes for granted that control is “something that happens more or less automatically” (2018). Blomberg uses semiotics to chart the mediation controllers provide between players and games, and for “connecting expression to content” (2018). Although they use separate approaches, Marcotte and Blomberg describe and critique a similar need for game scholars and game designers to pay greater attention to how the periludic interfaces that are controllers mediate and shape gameplay in too often unacknowledged ways.

2.5.4. Summary

work discussed in this section theoretically or empirically examines an element of media or games relevant to studying periludic interfaces, and the primary examples I discuss in this dissertation. Taylor discusses how the relationships that exist between games, gameplay, and real, everyday life can be messy (2006, 152). These sources help to build a cleaner, clearer, understanding of some of the interfaces that mediate the mess between players and their games.

In *Play Between Worlds,* Taylor says she is “interested in boundary work, in that such locations can be the place in which definitions become problematized or previously hidden practices are accounted for” (2006, 10). Taylor is interested in what she calls “border stories” about “players and issues not seen as central in the retellings of … games” (2006, 10). Each of the sources in this chapter tell a border story, or a story about an interface or activity on the border, periphery, or threshold of gameplay not central in the common stories of games.

Taylor describes an assemblage of play that comprises more than gameplay, with “nooks where fascinating work occurs; the flows between system and player, between emergent play and developer revisions, … between legal codes, designer intentions, and every day use practices, between contested forms of play, between expectation and contextualization" (2009, 332). Each source in this chapter in its own way supports a periludic lens that helps identify and explore these nooks and observe the interfaces that often maintain these flows between the various relational and ecological aspects of games and gameplay.

Chapter 3.

Methods

I used hermeneutics as my central method and content analysis and interviews as secondary methods. Hermeneutics is a method of interpretation that helps provide a level of understanding about how the form and content of media may be experienced rooted in evidence drawn from media and the expertise of the reader or observer (Føllesdal 2001; Gadamer 2006; T. Tanenbaum 2015). Hermeneutics allows me to make qualitatively reasoned claims about the interactions and experiences that authentication, character configuration, and controllers support. I used content analysis to support my hermeneutic inquiry by collecting evidence of pervasive themes in authentication, character configuration, and controllers. And I conducted ten semi-structured interviews with interface designers and game developers working at both large big-name studios and small independent companies to supplement my analysis with insights from those who design and develop these interfaces.

I used hermeneutics to examine how authentication, character configuration, and physical interfaces may come to matter to players by undertaking the same activities with these interfaces that players do when accessing their games. As I used each interface, I took systematic notes and recorded images to document my use of each individual element, and to reflect on how authentication, character configuration, and controllers fit together into the broader activity of gaming in which I was participating.

I used content analysis to study the condition of authentication, character configurations, and physical interfaces in my samples and as part of my hermeneutic read of each of these interfaces. For authentication, I observed trends in the mechanical form of the interfaces that manage assent to EULAs and TOS and those that manage identity verification in both the sample of digital distribution platforms and the sample of games. I also analyzed the content of the EULAs and TOS that dictate the conditions these interfaces manage. For character configuration, I analyzed the interfaces that manage selection or creation in the sample of games as well as the demographic characteristics of the characters players may take on as an outcome of these interfaces. For physical interfaces, I examined trends in physical characteristics and affordances of my sample of controllers.

I used semi-structured interviews with game developers to see how those that produce games view interfaces like those I study. These interviews were conducted alongside my analysis of my other analysis between Spring 2018 and Fall Winter 2020 in person or over Skype with nine developers in the United States, and one in Canada. Six participants worked at large publishers and four worked as independent developers. In these interviews, I asked participants to narrativize how interfaces like those I study—which they described or understood as "usability" or "User interface/User experience" (UI/UX) components of game software—fit into the larger game design process. These interviews provided high-level insights into the roles of periludic interfaces, and influenced my hermeneutic interpretation of authentication, character configuration, and physical interfaces.

3.1. Three data sets - sample selection

I rely on three overlapping samples to organize and empirically ground my hermeneutic inquiry and content analysis: The first data set comprises four PC digital distribution platforms and two home-gaming consoles. The second includes 200 games installed through Steam. The third includes 136 controllers for 61 home gaming devices released over a 47-year period. Where traditional hermeneutic analysis tends to focus on holistically interpreting one text, game, or media artifact, I rely on these large samples to interpret the role of specific interfaces within the medium of games and activity of gaming. The first sample of distribution platforms supports only my analysis of authentication interfaces. My games sample supports analysis of authentication interfaces and character configuration interfaces. My controllers sample only supports my analysis of physical interfaces. In this section, I outline my selection and sampling process.

3.1.1. Digital distribution platforms

I examined distribution platforms' handling of periludic aspects of games, such as assent to legal documentation and access control. For PC, I chose Blizzard/Activision's Battle.Net, EA's Origin, Valve's Steam, and Ubisoft's uPlay, as they were the most successful or prominent distribution platforms at the time of data collection. For instance, Game sales through Steam alone accounted for roughly a sixth of game sales in the U.S. in 2017 (Bailey 2018; ESA 2019). Steam supports games published by an extensive and diverse array of companies while Battle.Net, Origin, and uPlay only support games published by one company. For home-gaming consoles, I chose Microsoft's Xbox One, and Sony's Playstation 4, two of the most prominent gaming consoles which both, like Steam, made up a majority of home-gaming console game sales and support an extensive and diverse array of game publishers.

3.1.2. Games

I observed game software in order to analyze all potential layers of authentication required to access gameplay, and in order to analyze character configuration. I selected my 200 game sample from the Transformative Play Lab's 1500+ game Steam library at UCI. Lab affiliates, local game publishers, friends, and families contributed to this library. It contains a diverse collection of games across genres and tastes. Steam organizes games alphabetically by default. I started at the top and rolled a die to progress through the list, conditionally accepting each game I landed on before moving on with another dice roll.

I required additional selection criteria to dictate whether I included games selected by dice roll in the final sample. I could observe the presence and characteristics of authentication in any game but not all games have characters. To be included in the final sample, games needed to have some sort of embodied playable character. These playable characters did not need to be human, but humanoids of some sort did need to inhabit the game world to make connections to broader concerns about representation in games. Previous research studying representation in games such as Williams et al. (2009) and Passmore et al. (2017) exclude non-humans. I chose not to exclude non-humans because they may still be very human-like and can still express characteristics we associate with the gendered and racial performances at the center of discussions of representation in games (e.g., Langer 2008; Harper 2017).

I defined final inclusion in my dataset by the presence of humans in the game because of the value of observing themes of representation and performance, even in non-human forms, in the context of a human world. For example, games like Styx: Master of Shadows and Octodad meet my criteria despite non-human playable characters because players still take on bodies in play within a human world in ways that may provide insights about representation in games. In Styx, players enact an explicitly marginalized and minoritized lone goblin who can only survive by avoiding the gaze of a dominant human society. In Octodad players control an Octopus attempting to pass as human in everyday situations, as discussed by critical, queer, and media scholar Bo Ruberg (2019). Ruberg emphasizes how throughout the game, players risk losing their family, friends, and way of life if their identity is outed in an absurdist reproduction of real-world stigmatization (2019). I excluded many puzzle games and simulation games, such as Tetris or

SimCity, because they do not contain playable characters that enact any sort of performative representation I could observe.

I had to choose which version of selected games I would examine. Game updates, expansions, and unlockable content are common in the games industry. These updates, expansions, and unlocks may alter the game software, change conditions of authentication, and include additional playable characters, complicating fair comparison between games where this content is or is not available. To mitigate and simplify this situation as much as possible, I chose to observe each sampled game as a fresh installation, and ignored any unlockable, extra, downloadable, or purchasable content and characters even when freely available. A complete ludography of games observed can be found in Appendix A.

3.1.3. Controllers

I examined controllers as the primary physical interfaces players use to interact with games, game software, and gameplay. I selected my sample of controllers from the historical games collection at UCI. This collection was donated by a faculty member in the Informatics department. Although this collection is influenced by their tastes and biases, it contains at least one controller belonging to every major home-gaming device released in North America in the last 46 years (including contemporary gaming consoles, early computer-consoles such as the Commodore, and many handheld devices), accessory hardware (such as controllers, memory cards, and cameras), and an extensive library of games for most devices.

My sample includes every unique controller in this collection, as well as a handful of controllers not in the collection that I or colleagues had on hand. The sample totals 136 controllers for 61 home-gaming consoles released between 1972 and 2018. For the purposes of this study, I consider a mouse and keyboard a "controller" as I am only studying its use as a means of accessing and participating in gameplay. These controllers are a convenience sample, but the extent of the collection covers *all* primary controllers for mainstream or popular gaming devices since the launch of the first home-gaming platform, and many rarer examples. The resulting sample is representative of the timeline of controller design throughout the medium. A list of controllers by year and platform can be found in Appendix B.

3.2. Data processing

Although at a high level I collected each data set with the same basic approach, some details varied based on what I was observing. In each case, I *used* the essential interfaces, took notes and screenshots or pictures, and quantified details of the interfaces in a spreadsheet for content analysis. My approaches differed based on the affordances of each interface, and the processes they manage, enable, or constrain. In this section, I describe how I conducted my observations and collected my data for each interface.

3.2.1. Authentication Interfaces

I examined all authentication interfaces and related elements in each of the 6 distribution platforms and each of the 200 games. I observed and took notes on, and screenshots of, all forms of identity verification, assent to legal documentation, and any other element of either the platforms or games I perceived to be connected to or influenced by authentication in some way. My key concern was authentication itself, but I also wanted to round out my understanding of the outcomes it produces.

For each distribution platform and console, I participated in account creation, account login, and any aspect of the platform I needed to interact with in order to access games. I read licensing agreements—or similarly functioning documents, such as Steam's "subscriber agreement," that served the same purpose and contained similar verbiage—and noted and screenshot them. I recorded notable themes and conditions in these documents (e.g. terms of access, terms of liability, presence and nature of data monitoring). I observed each instance of identity verification and took screenshots as needed. I noted and screenshot any other feature of the platforms I considered related to outcomes of authentication as I encountered them (e.g. recommendations, tracked data such as play time or achievements, and any other personalized content).

As someone who plays a wide variety of games for research and recreation, I had previous experience with the distribution platforms included. To mitigate the influence of my own preferences and settings from years of use, I made my observations of all distribution platforms with newly created accounts. And, while I sampled the games from an existing lab account's library, I observed them as fresh installations on a new computer that required all authentication steps. EULAs and TOS are often only observable during initial access to a game, or a fresh installation.

For each of the 200 games, I conducted a similar observation of any identity verification and legal assent required to access gameplay, taking notes and screenshots. As with the distribution platforms, I read any EULA or TOS required by each game, recording any notable stipulations or conditions outlined within (e.g., terms of licensing, presence and nature of data monitoring detailed, or conditions of acceptable software modification). I also noted any aspect of games I could observe that relied on authentication enforced by either the game or the distribution platform (e.g. save features or use of account names). I organized my data on these games in a spreadsheet to quantify the occurrence of authentication and authentication-reliant elements across my sample, and to organize my notes on these.

3.2.2. Character Configuration

I examined how characters are configured in each of the 200 games. I spent 30 minutes with each game participating in character configuration at the outset of gameplay, taking notes and collecting details of all character configuration interfaces in a spreadsheet. I observed the modes of configuration (default, selection, or creation) and the details of the characters these interfaces provided or made possible to better understand the outcomes they produce.

I classified each game into one of three subsets based on how the games presented playable characters and how much influence players had on the character configuration in these games. Games with a *single default character* do not allow players a choice of character. Games with *multiple default characters* either provide players a limited choice of pre-defined characters or an ensemble of characters they may play. Games with *parametric character customization or creation* provide players the most power, allowing them to change aspects of their character's appearance and/or other mechanical or narrative elements (such as class or abilities) in a variety of ways.

I began my observations trying to capture as much as I could about the performative possibilities afforded by character configuration in these games. I coded playable characters with emergent demographic categories and other details as they became apparent or defined[3]. As I encountered new characteristics in the characters I examined, I created new categories and codes within them. I coded the characters in games with single-default or multiple default selection for

[3] At times, characters were challenging to code with specific racial or gendered categories. When these challenges only increased when discussing with my advisor, we consulted an ad-hoc group of colleagues within our lab and department for input and impressions. At first, this was meant to help validate the coding process. However, as we continued to consult this group, it became clear there was value in the varying perspectives each "reader" brought to the discussion. This realization altered how we viewed the coding process, resulting in a methodological analysis beyond the scope of this chapter or dissertation, but which is detailed in Gardner and Tanenbaum (2018).

species or alternative, apparent race, apparent sex and *apparent gender presentation, apparent age (range), apparent ability, apparent sexual orientation, and apparent socio-economic status*. All of these categories represent intersecting demographic characteristics characters, and players, may inhabit. I recognize these categories represent socio-political aspects of how people experience the world, as much or more than they indicate observable visual traits, and can be difficult to quantify from virtual bodies without players behind them. As I conducted my observations, I realized I would only be able to make decisive claims about two categories: *apparent race* and *apparent gender presentation*.

Race can code for cultural, ethnic, or regional heritage; skin color; or a wide array of other signifiers. I followed common-use and academic leads in my choice of codes, acknowledging the social construction of race and the histories and institutions of power built upon the terms I used. Examples of codes for *apparent race* are *Asian, Black, Latine,* and *White,* although at times I needed to create unique categories. For example, *Green* is used for three characters who shared this skin tone and did not flag any analogous real-world racial categories.

I initially attempted to code for *apparent sex* as well as *apparent gender presentation* because some games explicitly use the word sex. However, these games turned out to be a minority of those observed and *sex* became a less useful category when observing virtual bodies without actual biological, reproductive, or genetic information. I only observed *sex* being used explicitly in parametric interfaces to label elements that functioned identically to those labeled with *gender* in other games, and all gave the same options: *male* or *female*. The only codes I used for gender were *feminine, masculine,* and *undeterminable,* where undeterminable meant unable to observe rather than nonbinary as I did not observe a single nonbinary presenting default character.

In my current sample, I was unable to draw meaningful findings from coding *species or alternative, apparent age (range), apparent socio-economic status, apparent sexual orientation* and *apparent ability.* In part, the challenges I had with these categories were due to many of them not being explicitly addressed within the first 30 minutes of the games, if at all. Apparent species wasn't useful because I coded the vast majority of characters as *Human*. I would require iterative and deeper analysis to make meaningful claims about age and apparent socio-economic status. I was unable to responsibly code the sexual orientation of most characters given the timeframe of observation, as well as more general challenges around reliably assuming sexual identities in games described in greater detail by Shaw and Friesem (2016). I was unable to produce adequate codes for *apparent ability* because characters in games often simultaneously occupy positions on multiple intersecting axes of lack and excess of physical, mental, magical, technological, and narrative-based ability. This complexity requires and deserves more extensive data and analysis. All of these categories are goals of future research.

In games with parametric customization or creation, I could not collect data precisely analogous to that collected on games with single or multiple default characters. To do so would require gathering data on *all* the characters that players make themselves, a logistical improbability. Instead, I observed the possibility space within which players may create their characters. I examined the constraints of parametric interfaces by observing the ranges of possible expression and performance they allow. I began by noting the range of possible demographic identifiers and characteristics available for each game in line with my previously identified categories. For example, instead of "apparent" I coded and quantified *available gender presentations, available races, available species, available age ranges, etc.* in lists, in separate tab of my spreadsheet.

Parametric interfaces in different games offer differing varieties of characteristics other than simple demographics. Even when different games support the customization of similar characteristics, the available outcomes or widgets used for customization will vary. I borrow my use of *widget* from McArthur, Teather, and Jenson to refer to individual or unique "interaction elements within [a] graphical-user interface" (2015, 232). There are several common characteristic categories: physique alteration; "skin color," often in lieu of race; preset faces or individual facial features such as eye color, facial hair style and color, nose and mouth shape and positioning; age; tattoos, makeup, scars, or other surface details; and more. But, which skin colors, which hair styles, and which eye colors will be available, for example—or whether one or any aspect of a character's physique is customizable at all—will vary between games. I observed, noted, and analyzed these characteristics more qualitatively given a common inability to directly compare between games; a challenge noted by McArthur, Teather, and Jenson (2015).

In addition, I coded all games by development tier to differentiate games made by large *AAA* publishers or smaller *Indie* publishers. There is a common narrative within gaming communities that larger publishers are more risk averse, and wary of diverse characters that may not as clearly align with assumptions about their audience. Meanwhile, *Indie* games are often assumed to be more experimental and inclusive. Although *AAA* and *Indie* are hazy categories that more accurately exist on a spectrum, coding the games in my sample by development tier still allowed me to examine how these narratives played out in relation to character configuration in my sample.

3.2.3. Controllers

My research assistants and I cataloged each controller by the console it belonged to, and its year of release. When we could not find a release date for a controller, we substituted with the year the console it belonged to was released. We designated each controller as belonging to either a *stationary, handheld*, or *versatile* platform to differentiate between platforms that attach to a television for visual output, that are mobile with their own screen, or that can operate in both of these capacities. The distinction between these categories can be important to add context for some characteristics given *stationary* controllers are an accessory for their platform while *handhelds* are at once controller *and* platform.

For each controller, we recorded the *manufacturer; height, width, and depth* (measured at the broadest points)*, number of widgets* (in this case, interaction elements of a physical interface)*;* number and types of *directional widgets; connection format* (i.e., wired or wireless); *cord length if present; number of ports; types of ports;* and the *presence of motion control* and *haptic feedback*. We took seven pictures of each controller to supplement observations and analysis. These pictures were of the top, bottom, front, back, left-side, and right-side of the controller, and the end of any wired connector present.

I conducted both quantitative and qualitative analysis on the data collected on these controllers. I observed how each trait manifested over time for all controllers and each subcategory of stationary, handheld, or versatile. I analyzed how traits such as directional widgets, haptic feedback, and ports correlate with the introduction of prevalent game mechanics and shifts in design paradigms. I identified norms that suggested manufacturer priorities and moves toward standardization, and exceptional controllers that could provide unique insights into the history of physical interfaces in games

Chapter 4.

Authentication

Authentication interfaces enable social, economic, and legal outcomes as minor as players temporarily or permanently losing access to a game and as serious as prosecution for copyright infringement or intellectual property theft. These interfaces direct the playing of games through the policies and procedures they help facilitate. Authentication interfaces that manage mechanical, formalized assent and identity verification have the basic peritextual characteristic of acting as a threshold that controls gameplay and/or access to it. These interfaces that obtain assent and verify identity are important *periludic* examples because of the ways submitting to them enrolls players in legal relationships and surveillance activities that transcend gameplay.

Assent to EULAs and TOS legally defines the roles and responsibilities of players and publishers regarding each other and games. Dan Burk describes how TOS establish "legal regimes" over players (CITE 2010), i.e., "what behavior is and is not permissible" in a given digital context (CITE 2010, pg. 1). For players, EULAs and TOS stipulate the conditions of access, including consent to be monitored, agreement to uphold copyright by not modifying or re-distributing the game software, acceptance of limits on the liability of the publisher in the events of loss or damage, and agreement to treat other players as terms dictate. They describe the consequences of violating these conditions, such as loss of access or legal prosecution, and define the services players should expect from publishers or platforms such as server connectivity, maintenance, and forms of in-game conflict resolution. For publishers and platforms, EULAs and TOS commit companies to providing these services and access to gameplay so long as players assent to and abide by the conditions set forth, while providing a level of legal protection for their intellectual property that is the game.

Identity verification confirms a player's right to access an instance of gameplay for a specific game, or for all games attached to a given platform account. The identifier players provide determines the selection of games they may play, the services available to them, and potentially their in-game appearance and status. This verification serves to differentiate individual players for the purposes of online interactions, and surveillance.

In this chapter, I analyze the outcomes authentication interfaces dictate, enable, and enforce in my samples of six digital distribution platforms and 200 games to investigate and articulate the implications these interfaces have for digital games. Genette analyzed peripheral elements of texts, such as titles and prefaces, to illustrate how they function to present the priorities of authors and publishers and support the activity of reading. I foreground authentication interfaces on the periphery of games such as mechanical assent and identity verification to highlight how they present the priorities of publishers and platforms and influence the activity of gaming. Examining authentication interfaces periludically is especially useful for thinking through how even basic features of contemporary software development integrate into gaming *between* players and games. Authentication interfaces accentuate how game software is a combination of the complexities of traditional games *and* software into something that is sometimes difficult to disentangle

4.1. Gaining Assent

Assent to EULAs and TOS was a condition of accessing every game and gaming platform I observed. I was consistently required to assent to two to three EULAs and/or TOS to access gameplay. Had I observed games on the other distribution platforms in my sample other than Steam, this sort of assent would have been a condition of accessing those games too as every platform I examined required an account to access any games or services. Each account required assent to terms and conditions associated with the platform and its role as both digital retailer and game library manager. Every game I examined required assent to a EULA as part of installation. These EULAs contained the conditions of accessing the specific game it was tied to. Nineteen of the 200 games required assent to conditions attached to another account similar to the platform accounts except attached only to games of a specific publisher. This third assent was always encountered after installation, when opening the game software, and became an additional condition of accessing specific games.

I observed interfaces that presented EULAs and TOS in an immediately visible scrolling window, such as in Figure 4.1 and Figure 4.2, or that relied on a link to a separately hosted EULA or TOS, such as in Figure 4.3. In all interfaces, active assent was achieved either through a checkbox (e.g., Figure 4.1), or button labeled with something like “I agree” on it (e.g., Fig. Figure 4.2).

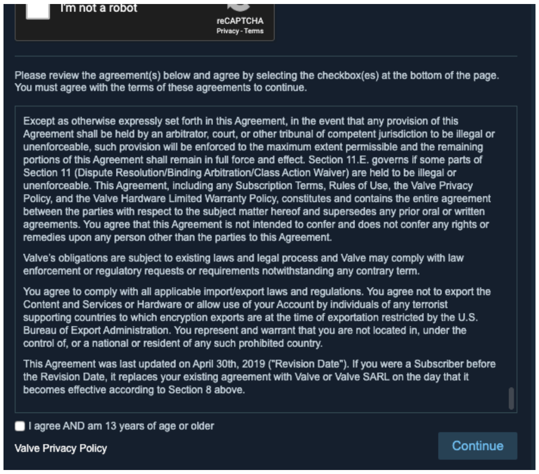

Figure 4.1: Assent to "subscriber agreement" during account creation for Steam

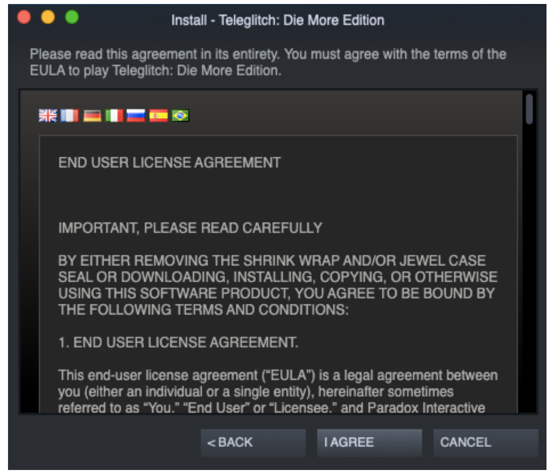

Figure 4.2: EULA assent for Teleglitch: Die More Edition through Steam

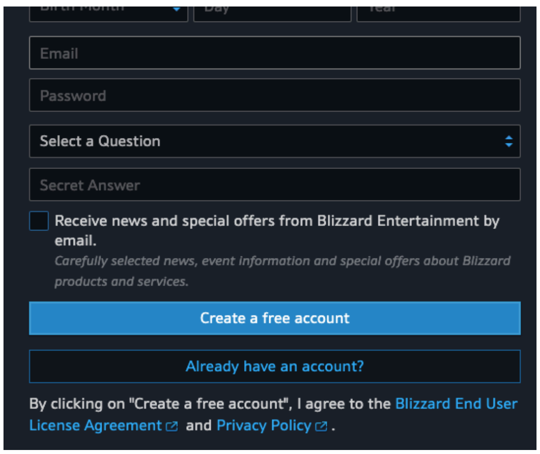

Figure 4.3: Initial account creation interface for Blizzard's Battle.net with link to EULA

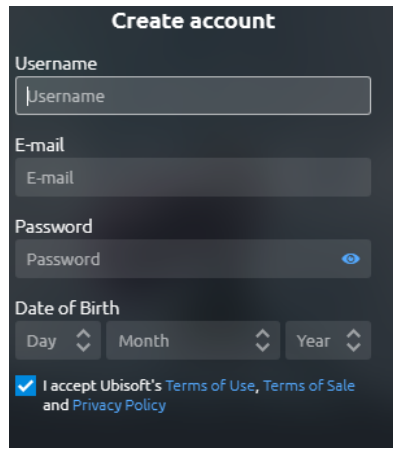

Figure 4.4: Ubisoft Account Creation for games hosted through Steam, observed in this instance when accessing Child of Light. Similar in format to uPlay Interface, when using that distribution platform.

4.1.1. Assent for distribution platforms

Active assent to EULAs and TOS on the PC platforms I observed did not always include immediate access to the terms to which I was assenting. Three of the four PC platforms relied on optional links to EULAs or TOS hosted elsewhere rather than providing immediately visible conditions (e.g., Figure 4.3 and Figure 4.4). These links opened an additional window with the appropriate terms and conditions. Steam was the only platform whose terms were immediately visible, embedded within the account creation interface (Figure 4.1).

Active assent to PlayStation and Xbox account EULAs differed from the PC distribution platforms in only a few respects. None of the PC distribution platforms had a premium subscription, or fee for service. Although I could create free accounts on PlayStation and Xbox, access to the full range of services required an upgraded “plus” or “gold” account, respectively. PlayStation account creation and assent to the PlayStation EULA was only accessible on the console. The EULA was visibly presented immediately upon initial account creation and assent was granted by pressing an “accept” button before being able to continue. For the Xbox, it was possible to create the account from the console itself or through a web browser. The Xbox interface displayed a link to the EULA after providing or creating a new email and making a password. A “Next” button then needed to be pressed that the interface explained meant assenting to the linked terms (similar in format to the Battle.net interface seen in Figure 4.3), whether or not the link had been clicked, or terms reviewed.

4.1.2. Assent for games

Steam managed the active assent to all game-specific EULAs I observed through a standardized “I agree” button format that visibly displayed conditions embedded within the interface seen in Figure 4.2. This interface was consistent in form across all games on the platform, creating a uniform assent process for a variety of conditions dictated by a wide array of publishers for an even wider array of games and game types.

The interfaces publishers used for the third active assent I sometimes observed in my games sample were similar in form and function to those I observed distribution platforms using. These interfaces utilized either the “I agree” button or checkbox formats with terms either visibly displayed or linked (e.g., Figure 4.4).

4.1.3. EULA content

The EULAs and TOS I analyzed provided information about the software being installed or accessed, and insight into the terms settled by the assent interfaces at the center of my analysis. These EULAs and TOS described how distribution platforms or game software may be used, what conditions of access players must adhere to, and the limits to the liability of those who produced that software. The distribution platforms I observed only presented EULAs or TOS when creating accounts. Although a small percentage of the games I observed displayed key excerpts of their EULA or TOS as part of the software launching, overwhelmingly full EULAs or TOS were only made available as part of the initial installation of game software.

All EULAs I analyzed defined the conditions under which players receive the *license* to access a distribution platform or game software and explicitly established the ownership of intellectual property and the terms of accessing it. Every EULA I read made it clear that the game, game software, or platform players were accessing was the property of either publishers or platforms. In these documents, publishers and platforms claimed to not so much sell software, as lease access to it in return for a one-time purchase or recurring subscription and assent to EULAs and TOS. Provided a player continued to abide the conditions of a EULA, they would be permitted to continue maintaining a platform account or allowed access to a copy of digital game software. Nearly all EULAs I examined prohibited players from copying, corrupting, modifying, redistributing, or otherwise risking the integrity of the software and any related services.

Forty-three of the games I observed had conditions for data monitoring in their EULAs. Although updates, ports, and re-releases make it difficult to always know if data monitoring was initially part of some games, the earliest game in my sample I am confident launched with terms for data monitoring integrated into the game software was released in 2008. The majority of games with terms for data monitoring were released after 2010. I coded only four of these games as *indie.* These data suggest this sort of surveillance of player activity is still relatively new and primarily done by larger publishers.

Most of the TOS I analyzed reiterated some of the conditions present in EULAs, especially as may pertain to licensing, access, and corrupting or modifying the game. TOS were often, however, more concerned with the etiquette of players while using a game. TOS often defined in greater detail than a EULA how publishers expected players to behave during gameplay or while connected to an online space. TOS usually had more to do with moderating exploitive activities or toxic and aggressive behavior than maintaining licensing and ownership.

All EULAs and TOS defined the consequences of failing to uphold the rules they described. The most common response they outlined was loss of access to the game. In more extreme cases, EULAs in particular would cite relevant state or federal laws that could be used to justify legal action, either in the form of a lawsuit, or criminal charges.

4.2. Verifying Access

Identity verification was a requirement to access gameplay in all of the games I observed, and any game that would have been played on every distribution platform I observed. I was required to verify my identity one to two times to access gameplay in all 200 games I observed. These games were hosted by Steam and it and every other digital distribution platform I observed required identity verification to access hosted game libraries. In the same nineteen games that required assent to publisher account EULAs, I needed to verify my identity a second time. The accounts necessary to access these games were not game-specific and could be used to log into all games by the same publisher newer than a certain point. I was not able to observe the exact point for each company where these accounts became the norm, I simply observed that older games in my sample by these same publishers did not require additional identity verification or account linking.

I did not encounter any unique game-specific identity verification in my sample. This may be because I did not sample any MMOs or online service-based games that allow for play across different devices or platforms. That is, Final Fantasy XIV—for example—can be played on PC, PS3, and PS4 with the same account credentials. Although at the time of data collection, this game did not launch through Steam on PC, it is now available and requires a game-specific login as well as a Steam login to play, so similar games could have been encountered.

All PC platforms and the PlayStation required identity verification for any level of access while the Xbox allowed some level of access without signing in. The Xbox did, however, enforce account login when attempting to open games or applications. Although both PlayStation and Xbox technically offered "guest" account access, this access comes with severe limitations on platform amenities and games and an inability to save gameplay progress.

I observed two methods of identity verification in my samples of distribution platforms and games. The first and most common was a standard two-textbox username and password entry, as seen in Figure 4.5. With this interface, players provide a two-part identifier in the form of an account name and password in return for access to either a platform account or game. Username and password interfaces were a requirement to access all platforms, and as a result all games on those platforms. The second form of identity verification I observed was a simplified account selection of previously verified accounts, without password entry. Simplified account selection was only functional on return attempts to access *after* an initial username and password login, when a password had been entered and/or "remembered" by the system during previous access. These examples looked either like a username and password interface automatically filled in, requiring only to press the "login" button, or, as with the gaming consoles, a means of selecting a saved profile based on an image and account name (e.g., Figure 4.6). Three of the Four PC platforms allowed me to "stay signed in," and the fourth offered to "remember my password" so the sign-in became a single click. PlayStation and Xbox both defaulted to pre-authenticated account selection when turned on. All nineteen games with additional identity verification allowed auto-verification in some form. Even in these cases when identity verification became streamlined or automated (and less visible as a result), it was still a requirement that had to occur before gameplay could be accessed or could commence.

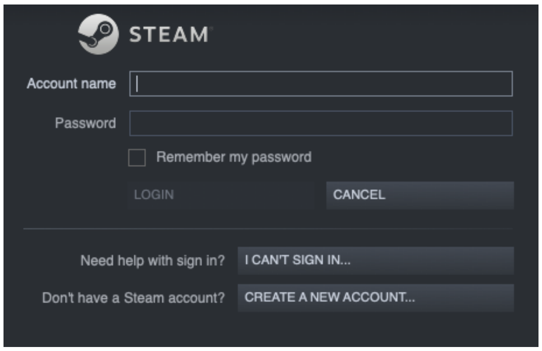

Figure 4.5: Steam Login, standard username and password entry

Figure 4.6: PlayStation 4 Initial sign-in/return sign in interface

4.3. Authentication Implications

Of all the periludic interfaces I discuss in this dissertation, authentication is the most formal *threshold*. In chapter two, I included an image of the 2002 reprint of Genette's *Seuils/Paratext* with a small girl looking toward a door leading out of a house (Figure 2.1). Were I to redo the cover, I would position the girl outside the house looking in, rather than inside looking out, to be more consistent with Genette's analysis in the sense that rather than leading us out into the broad outside world, peritext leads us into smaller, authored, specific spaces of creative production. In my version of the cover of *Seuils/Paratext*, authentication functions to dictate whose home is pictured, what conditions are associated with entry, and whether the homeowner has permitted this specific little girl access. In games, authentication maintains the border between what is or is not game software; what publishers or players do or do not own; which players may or may not access; and what players may or may not *do* while in games.

Periludic authentication interfaces direct the playing of games more explicitly than many of Genette's examples of peritext direct the reading of texts. Peritext often directs our reading of books and the texts within by helping us confirm we are in the correct chapter, or even the correct text. Periludic authentication interfaces exclusively serve the activity of gaming in pragmatic security, technical, and legal senses.

Authentication serves as a barrier at the borders of gameplay and Burk's "legal regimes" (Burk 2010), by controlling how players may cross those borders and enter those regimes to access gameplay. Authentication interfaces control the activity of gameplay by enabling, confirming, and enforcing rules and relationships that develop between players, games, publishers, and distribution platforms. Interfaces that record our assent to EULAs and TOS direct the functional playing of games by establishing what players have agreed they shall or shall not be permitted to do while participating in gameplay. Interfaces that verify the identity of players serve to continually validate player access and index player activity while playing. Index in two senses: First, in the semiotic sense that the accounts and identifiers that are verified *point* to players, indicating their presence when entered. Index in the second sense that account names and identifiers allow players and their activity to be arranged and organized for purposes of access control validation, and surveillance.

Authentication interfaces may enforce access to an individual game or all games tied to a given publisher or distribution platform account. The attachment of interfaces that acquire assent and verify identities to digital games adds new constraints and limitations to how players may access and experience gameplay. It is important to look at the transactions of authority that Assent and identity verification manage to better understand the distinct yet interconnected influences they exert on the medium of games

4.3.1. Assent

Different forms of assent have always been present at the threshold of games. The formalization, mechanization, and legalization of assent that I describe here, however, are something new and unique to digital games. Theorists such as Avedon and Sutton-Smith, and Suits emphasize how games are an "exercise of voluntary control systems" (Avedon and Sutton-Smith 1971, 405), and that playing them is a "voluntary effort" (Suits 1990, 41). In voluntary gameplay, players are assenting to conditions or rules of play to which they expect to become subject. The conditions players are assenting to in these more traditional analyses may have to do with what outcomes determine a winner and what actions are acceptable to achieve that outcome. This form of assent is primarily abstract and influences the dynamics of gameplay. The assent to EULAs and TOS that periludic authentication interfaces request of players as a condition of accessing gameplay, however, is more concerned with outcomes that directly influence players in real life.

The abstract assent associated with voluntary play allows theorists such as Avedon and Sutton-Smith and Suits to analyze what may occur *in* games. The authentication interfaces that formalize and mechanize legal assent as a condition of accessing digital gameplay on the other hand, are an opportunity for game scholars to study what players are permitted to do *to* digital games and the game software necessary to play them, and what behavior is allowed during yet beyond formal gameplay interactions.

In traditional games, the only time players are subject to strict formalized assent is when those games become professionalized. Periludic interfaces that acquire assent bring this level of formalization previously reserved for professional settings to everyday gameplay. The attachment of these interfaces and the protection they afford publishers represent a reasonable adaptation to the digitalization and computerization of games and represent security best practices across software industries. These interfaces and the transactions they manage, however, are nonetheless a new component of the medium of games as it evolves and digitizes that remains understudied, and whose effects on the activity of gaming require more attention.

The role of this new formalized legal assent is quite different than the more abstract assent described by earlier game scholars such as Sutton-Smith and Suits. Although voluntarily assenting to traditional gameplay may have long-term personal and emotional outcomes, the more immediate pragmatic and functional outcome is simply that gameplay will commence. The formalized legal assent enforced by authentication interfaces does not initiate gameplay can far-reaching pragmatic effects outside gameplay. These interfaces bar access to gameplay and their immediate pragmatic and functional outcome is entering players into a formal legal relationship that transcends the game. Periludic, mechanical, formal assent informs players how they *must* interact with game software if they want to retain access to gameplay. Ignoring these interfaces that are a mandatory condition of everyday gameplay because they are a common feature of contemporary software applications means neglecting an important aspect of how players access and experience gameplay in contemporary gaming.

4.3.2. Identity verification

I could find no literature that has considered the personal, social, functional, or theoretical implications that consistent player identity verification has on the medium of games or the activity of gaming—digital or otherwise. Although there are scholars within security domains who have applied concerns about piracy, technical exploitation, and leaks of private information to the analysis of potential technical vulnerabilities associated with the implementation of identity verification in games software (e.g., GauthierDickey et al. 2004; Assiotis and Tzanov 2006; Dotan 2010), their findings do not consider impacts to games beyond their role as software.

As with formalized assent, consistent identity verification is only present in traditional games when they become professionalized. Periludic identity verification interfaces attached to digital games brings this level of security and formalized player validation to everyday gameplay at the outset of *every* gameplay session. Periludic identity verification requires players to link their real identity to their gameplay activity in a formalized and mechanical way at a scale unprecedented in the historical study of games.

Like interfaces that obtain assent, the attachment of identity verification interfaces to games software represents a reasonable adaptation to the digitalization and computerization of games and security best practices across software industries. Like formal assent, however, consistent identity verification is an explicit threshold attached to the evolving medium of games whose underlying effects require more attention by those who make and study games.

Identity verification opereates periludically, and recalls Genette's peritext, for reasons beyond its immediate control over gameplay access. In "Pretexts and paratexts: The art of the peripheral," Maclean emphasizes how Genette's peritext provides information or directions, or makes requests, directly to readers (Maclean, 1991). If periludic interfaces similarly provide information or directions, or make requests directly to the player, identity verification represents probably the *most* direct request of players when the interfaces that manage it ask, "who are you?" (Figure 4.7). Identity verification is an inherent component of contemporary digital gaming that serves to constrain *how* we consume games and *who* may consume them. Unlike every day games of basketball, Sorry!, Dungeons & Dragons, or any early digital game, it is no longer the players who entirely decide who may play an individual instance of gameplay as players without the proper credentials are barred from access.

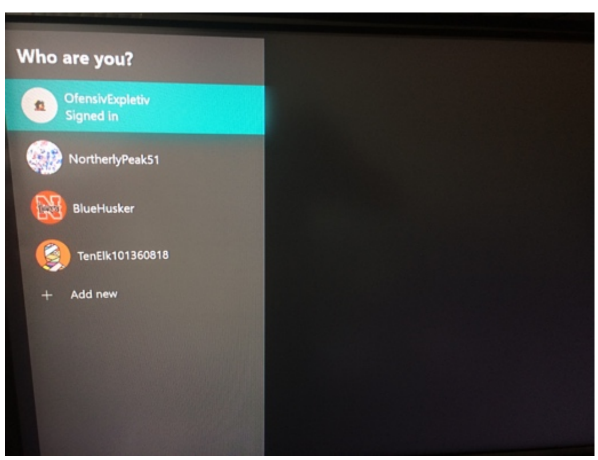

Figure 4.7: Xbox active account verification of previously verified and remembered accounts

Publishers and platforms use identity verification to confirm and enforce the license to access gameplay granted to specific players who have assented to EULAs and TOS. Publishers and platforms can only confirm or revoke a player's access to a game, or bring them to court, if they are able to identify and differentiate individual players. As a persistent player indexing function, identity verification transforms the act of initiating gameplay by affirming player enrollment in larger institutions of service and surveillance.

To Genette, peritexts manifest the creative, functional, and institutional priorities of authors and publishers to influence how readers consume books. Although on the one hand, identity verification is a byproduct of the shift to digitalization and computerization, on the other hand it indicates how digital games have grown beyond being a familiar, albeit electronic, media artifact. Periludic identity verification not only indexes players from the threshold of gameplay, it indexes the functional and institutional priorities of publishers and platforms whose products are consumed by millions of players.

In *Seeing Like a State,* James Scott describes how states and large institutions eventually need to develop systems to make their members "legible" (1998). Though often intended to be neutral and clerical interventions, these systems exert authority from a position of power to enforce organization. For example, Scott describes the imposition of surnames in England and Italy coinciding with the need to track tax and tithe collection over wide geographic regions and in official written administrative documentation. "Some second designation was absolutely essential for the records, and, if the subject suggested none, it was invented for him by the recording clerk" (Scott 1998, 67–68).

In contemporary digital games, player account names that serve as half of their username and password identifier might as well be an additional surname. As my ancestor likely chose or was given "Gard[e]ner" to index their profession, I might choose an account name that indexes some aspect of my own identity (Crenshaw and Nardi 2014). If I cannot provide a unique identifier, some interfaces are even equipped to offer suggestions, just like their human bureaucratic ancestors (e.g., "how about desiredusername372021?").

Identity verification enrolls players into these publisher and platform institutions through its role as a rigid threshold of gameplay. Once again, we have an interface that if ignored because it is a common feature of contemporary software applications, means neglecting an important aspect of how players access and experience gameplay in everyday gameplay in contemporary digital gaming. Distribution platform identity verification at the level of game libraries adds further complexity to this situation. Distribution platforms control access and monitor player activity across many games. Platform account names often follow players into games—e.g., labeling save files or avatars—and are often displayed to others in shared or competitive spaces. That is, the identity verified by the distribution platform rather than an individual game is enforced in-game, during gameplay.

It is difficult to find a scholarly analogy for the impact of third-party identity verification on gameplay. As mentioned in chapter two, scholars such as McCraken (2013) and Smyth (Smyth 2014) have considered the ways that paratext and peritext may be adapted to ebooks. However, while they consider the expansion of these concepts to incorporate aspects of the platform through which an ebook is read, such as platform driven annotations and page-turning functions, they do not analyze the broader institutional consequences of this remediation. While platform studies scholars have considered some of the general relationships games have with platforms (e.g., Bogost and Montfort 2009; Montfort and Bogost 2009; Boellstorff and Soderman 2017; Apperley and Parikka 2018), none have provided quite the sort of integrated analysis that McCraken and Smyth do for ebooks—or that platform authentication that integrates with individual game features suggests is necessary in contemporary digital games.

Identity verification through a third party such as a distribution platform is an increasingly necessary threshold to gameplay that is increasingly tied to in-game outcomes. Digital games hosted by these digital platforms may not be played—even on the device they are already installed on—without a player verifying their identity or conducting activities that require uncommon technical skill and likely breach rules dictated by EULAs and TOS. Peripheral, attached, and strictly enforced identity verification is a significant shift to the medium of games and the activity of gaming, the impacts of which a periludic lens is particularly useful for studying.

4.3.3. Surveillance/activity monitoring

One of the most immediate outcomes of authentication I observed in my samples was evidence of surveillance. As mentioned above, permission to collect data was explicit in many of the EULAs I read and identity verification allows player activity to be indexed.

The consistent indexing that identity verification enables makes it impossible for players to remain anonymous by preventing what computer, data, and security scholars Andreas Pfitzmann and Marit Köhntopp describe as "unlinkability" (2001). Pfitzmann and Köhntopp describe unlinkability as when two or more "items are no more and no less related than they are related concerning the a-priori knowledge. This means that the probability those items being related stays the same before (a-priori knowledge) and after" encountering them (2001, 2). The example they provide is sent messages: "two messages are unlinkable if the probability that they are sent by the same sender and/or received by the same recipient is the same as those imposed by the a-priori knowledge" (Pfitzmann and Köhntopp 2001, 2). With games, this means that to an un-related party, such as a game publisher, any two random instances of gameplay that are no more or less likely to be related are unlinkable. If any two random players are no more or no less likely to be related, within a single gameplay instance or across multiple instances, they are unlinkable. Identity verification makes players and their gameplay activities across all gameplay sessions linkable and observable in a manner that was impossible for traditional gameplay and not present in early digital games.

As I collected all of my data, I was unable to avoid observing constant recommendations based on the odd variety of games I was "playing" (e.g., Figure 4.8). That is, Steam would algorithmically *recommend* games I should play, or buy, based on the data they had collected on my activity (Figure 4.8). These recommendations evolved as I made my way through the 200 games. Encountering these recommendations and other more singular instances (e.g., Figure 4.9) helped to highlight the depth of the surveillance enabled by authentication—especially identity verification—and the assumptions being made based on data that purported to explain what kind of player I might be.

Publishers and platforms rely on data collection approved through legal assent and enabled through identity verification to create files, or "data doubles" (Haggerty and Ericson 2000), about players to build descriptive and even predictive models and improve efforts to influence purchasing behavior (e.g., Figure 4.8 and Figure 4.9). Just as the interfaces that enable these practices are commonplace across software industries so too are these practices, as observed by scholars such as Clarke (1988), Zimmer (2008), Gregg , Caplan and boyd (2016), and Seaver (2019) have observed in social media and other digital contexts. Companies use these data to continually reconfigure the state of distribution platforms and embedded digital retail spaces in an attempt to optimize sales.

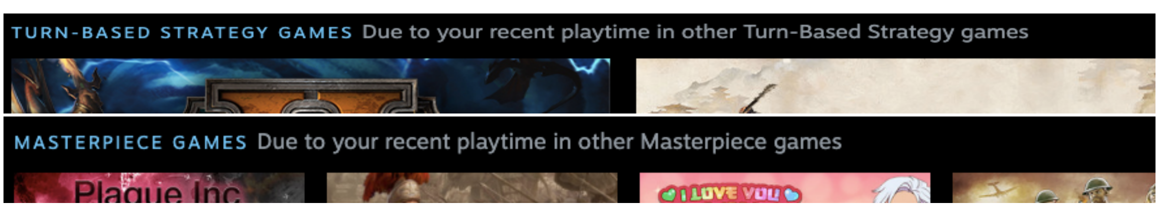

Figure 4.8: Two examples of recommendations for other games to play provided by Steam that implicate their surveillance

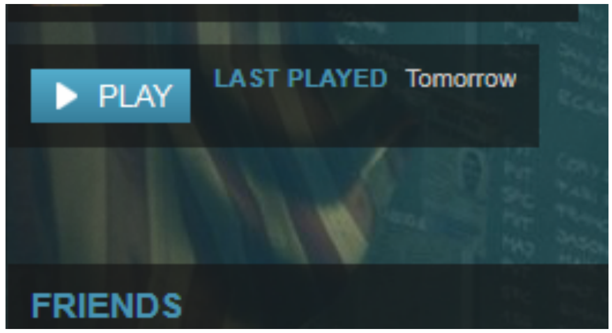

Figure 4.9: An apparent glitch in Steam I observed on my own account that nonetheless illustrates a sort of ideal scenario for companies and why data is collected by the platform. To be fair, I did play it the next day.

Through authentication interfaces, players enroll themselves in these data-driven practices and institutions of surveillance and recommendation in return for access to gameplay. Although these recommendations may not be part of games in the traditional sense, the data they are based on is recorded in games and they are only made possible because authentication is an everyday requirement of accessing digital gameplay. Players become "ensnared" in the sorts of algorithmic "traps," that anthropologist Nick Seaver describes in the context of music streaming platforms and broader Silicon Valley development (2019). Seaver observes the ways tech companies wield user data and algorithms to "captivate" users and encourage additional use or purchases. Seaver critiques the ways tech companies utilize design choices that mimic design choices in mechanical slot machines that, as Natasha Schüll writes in *Addiction by Design,* are intended to decrease critical thought (2012). In his critique, Seaver points to the influence in the tech sector of best-selling books such as *Hooked: How to Build Habit-Forming Products* (Eyal 2014), and *Don't Make me Think (Krug 2014)*—which explicitly proselytize these techniques for successful software development.

Although the surveillance and algorithmic recommendations I describe are primarily the work of distribution platforms, the surveillance authentication interfaces enable does have more direct impacts on games and gameplay. Recording gameplay activity isn't especially new. All forms of scorekeeping are a form of data collection within a given instance of gameplay. Digital games with competitive modes have long had ways of communicating this information through scores and "post-game" reports of various formats that give players additional information on their in-game performance and activity (e.g. Figure 4.10). In early home-gaming contexts, however, games did not maintain this sort of data in any long-term sense. Periludic authentication allows publishers to collect player data across multiple instances of gameplay over days, weeks, or years (e.g., Figure 4.10).

Figure 4.10: Post-game data from Halo that describes one game and dissapeared after leaving this screen (left) and Match history for Leage of Legends which contains detailed activity data for the last tens of games by a single player (Right)

Long-term surveillance serves several purposes and can benefit players as well as publishers. In competitive games, the detailed record of past game performance can provide players a tool to reflect on past games and improve performance that previous generations of players simply did not have. The data publishers collect often isn't limited to scores and other in-game performance statistics. Publishers collect information on the underlying game state or chat logs too. They use performance and underlying game data to fine-tune games that exist in a constant state of development as service-based products—as is increasingly commonplace. Publishers may use chat logs in arbitrating complaints or to support punitive actions to suspend or ban player access. A periludic lens is ideal for highlighting how these surveillance practices and their outcomes are leveraged onto and change the nature of games through the authentication required at the threshold of gameplay.

4.4. Summary

Although authentication interfaces may largely exist to support the priorities of publishers and platforms, they are more than simply a way for these companies to gain advantage over players. TOS often exist specifically to protect players from the malicious or derogatory behavior of other players during gameplay. When collected data is shared with players, it can help dedicated individuals improve their skill and find areas where they may optimize their gameplay. Companies can use player gameplay data to balance mechanics and update the overall functionality of games.

And, less centered in-game, EULAs and TOS do serve to provide limited protection for companies from the malicious activities of those interested in damaging proprietary assets or services.

Enforcing formal—even legal—boundaries, game ownership, and tracking player activity are not entirely new to games. Authentication built into interfaces as a condition of accessing digital games, however, highlights a shift from these activities occurring only in professional contexts to being pervasive in everyday gaming. These interfaces highlight a shift in how the medium of games may be consumed and how the activity of gameplay may be accessed that acknowledges the role of digital games as also game *software*. Authentication interfaces highlight how beginning gameplay in contemporary games always involves asking for permission from a publisher and/or platform and cannot be initiated exclusively by players.

Identity verification tied to specific games, platforms, or devices and the increasingly common requirement to always be signed-in and/or online to initiate gameplay in even single-player games means players are never quite playing alone. This constant authentication and publisher oversight make it difficult to share or steal digital games without an increasing level of technical skill. Although reducing theft is ideal, the ability to lend or borrow games is a potentially meaningful path to games for new players still developing their tastes and games fluency, as it was for me when I began gaming.

Periludic authentication interfaces serve as a particularly good lens for investigating another shift in how digital games are played by emphasizing the role of digital distribution platforms and publisher accounts. Although platforms themselves aren't new, and there is even a rise in historical and critical platform studies (Boellstorff and Soderman 2017), they are often treated as distinct from games in ways that a periludic lens complicates. Digital distribution platforms, mainly through authentication practices, are integrated with games in not yet clearly understood ways. As discussed above, platforms may enforce the identities their accounts verify, even in individual games. And the EULAs and TOS players assent to for these platforms and accounts cover player activity during gameplay.

Digital distribution accounts and publisher specific accounts have the ability to tie together gameplay activity across several games and instances of gameplay. Prior to the rise of publisher-specific distribution platforms such as Battle.net, or uPlay, even games and game software created by the same publisher were individual and self-contained software artifacts. Now, companies can link activity across games so that gameplay activity in one can game may affect gameplay activity in another, perhaps by awarding in-game items. The increase in publisher specific platforms and accounts suggests that publishers are gaining an increased interest in broader scales of data.

During gameplay, digital distribution platforms that host, manage, and often provide interface overlays on top of, or around gameplay reside in their own state of "quasi-detachment," as Derrida puts it (1979). These platforms often manage many of the social and networked aspects that can fuel online gameplay. As is particularly noteworthy with platforms that host games for other publishers, however, these platforms hold gameplay hostage in a way somewhat unprecedented in the study of games. If a player uninstalls Steam, they lose access to their library of games produced by a range of publishers. Even if a player saves the game software on their computer first, without uncommon technical skill, they will not be able to utilize it for gameplay. Distribution platforms are able to make themselves a necessary component of gameplay because of the exclusive access to games they are able to maintain through authentication leveraged *between* players and games.

Many of the outcomes I have identified as produced by authentication in this chapter may in part be driven by larger adaptations in the ways we manage and protect software. Outcomes such as the impact of surveillance and dataveillance parallel practices across digital media that have been studied by other scholars (e.g., Gregg 2015; Caplan and Boyd 2016; Seaver 2019). How these consequences may uniquely manifest in games, however, is terribly understudied. How publishers and platforms design and implement authentication interfaces in games and how players experience the outcomes leveraged by these interfaces are important additions to how we study gameplay and the medium of games. The familiar chores of logging in and assenting to a EULA mask the sometimes-far-reaching influence they can have on gameplay behind their practicality and mundanity.

Chapter 5.

Character Configuration

Character configuration interfaces allow players to select, customize, or create characters. These interfaces function as a periludic threshold that influences the activity of gaming by constraining the embodiments players may enact. Character configuration is a contact point where publisher priorities and player feelings about representation come together in gaming practice. Character configuration interfaces are how publishers communicate who they have chosen games to be about and where players contend with those choices.

Configuration highlights how playable characters and their demographic characteristics are not simply a static feature of gameplay. Character configuration interfaces mediate the priorities of publishers and the intent of players *to produce* the representation commonly observed in games.

In this chapter, I examine character configuration interfaces and the demographic and performative outcomes they enable in my sample of 200 games. I examine the characters players may take on and the limitations imposed on the sorts of characters players may create.

I foreground character configuration interfaces to highlight how players accept performative constraints for in-game playable characters as a condition of accessing gameplay. For the purposes of this dissertation, the only characters that are of interest are those that are playable.

In my analysis, I rely on my data about characters and choices in character configuration interfaces as evidence of constraints in character configuration. I examine how these constraints in character configuration interfaces materialize publisher priorities in the design process. I examine character configuration interfaces as a periludic element of games that dictates the taking on of these characters.

5.1. Selection, Customization, and Creation processes

Games manage character configuration in a variety of ways. As I described in chapter three, I classified the games in my sample into three subsets based on how they presented characters to players. Some games provided a single-default character. Some games provided multiple default characters. Some games provided extensive parametric customization options that allow players to craft characters within given constraints.

I use these three subsets to organize this chapter. 149 games had single-default characters, 34 games had multiple default characters, 16 games had parametric customization, and one game occupied a unique category I will discuss below. In all of these games, it was impossible to initiate gameplay without receiving, selecting, or creating a character.

Table 5.1: data subsets based on character configuration type

	Totals
Games with single-default characters	149
Games with multiple default characters	34
Games with parametric Customization	16
Rust	1

5.1.1. Games with single-default characters

The primary game mode for 146 of the 149 games with single-default characters was some form of single-player, narrative-driven experience. I use game *mode* to refer to how game software may allow for different versions of gameplay, such as single-player or story modes and multi-player or some kind of cooperative or competitive modes. Because players cannot play any other characters in games with a single-default character, character configuration occurs as part of starting the game. The Alan Wake start menu pictured below is a quintessential example (Figure 5.1). The game's title signifies the character players will take on. Beginning gameplay and *selecting* the eponymous Alan are the same choice.

The primary game-mode for the remaining three of the 149 single-default games was competitive multiplayer. These games were Counter-Strike, Counter-Strike: Condition Zero, and Darkest Hour: Europe 44-45. Although players may choose to play as different factions in these games, the choice does not impact the visible embodiment of the character they take on. Hands are the only part of a character's body that is visible to the player. Because what players select is a faction in a conflict (e.g., terrorists or counter-terrorists) *not* a specific character, and the hands that are visible are visually and demographically indistinguishable regardless of chosen faction (Figure 5.2), I coded these games as single-default.

Figure 5.1: Screenshot of Alan Wake title screen

Figure 5.2: Screenshot of Counter-Strike player character's hands, regardless of faction choice

5.1.2. Games with multiple default characters

Games with multiple default characters varied greatly in modes of gameplay and character selection. Some games functioned similarly to games with single-default characters, except, instead of providing one character to play, they provided a group of characters that a player controls all at once. Some games provided multiple characters played in succession as gameplay progressed. Some games provided a selection of characters that players may choose between for lengthy narrative-driven game modes or for modes organized around short, repeatable instances of gameplay. I use *instance* to refer to a complete run of gameplay from start to completion, which may be repeated, such as the entire length of a narrative-driven game or a single match of a competitive multiplayer game. Some games provided more than one sub-category or combinations of two or more because they supported more than one gameplay mode.

Pictured below are a variety of selection formats in games with multiple default characters. Figure 5.3 is from Deadly Sin 2, a single player role-playing game where players control an ensemble of default characters at the outset of gameplay. Figure 5.4 is from Valdis Story, a side-scrolling action role-playing game where the player chooses one character to play through a lengthy narrative mode that differs slightly based on the chosen character. Figure 5.5 is from Team Fortress 2, a shooting game with several multiplayer gameplay modes based around repetitions of short-duration gameplay instances. Players select one of nine characters at the outset of a gameplay instance and each time they die. Figure 5.6 comes from Rogue Legacy, a side-scrolling action role-playing game that combines default characters played in succession and selection of multiple default character. In this game, character death is permanent. Each time players die, they choose one of three possible heirs to their previous character to succeed a family quest to defeat the antagonist.

Figure 5.3: Screenshot of Deadly Sins 2 combat screen

Figure 5.4: screenshot of Valdis Story Character select

Figure 5.5: Screenshot of Team Fortress 2 character selection

Figure 5.6: Screenshot of Rogue Legacy character/heir selection

5.1.3. Games with parametric customization

Parametric interfaces allow the configuration of varying aspects of character appearance and abilities through different types of widgets. As described in chapter three, I rely on McArthur et al.'s description of widgets as "interaction elements within [a] graphical user interface" (Cite, p2 of pdf). Some games had sliding bars between opposing positions, where sliding one way or another shifted the parameters of given character features, such as eye shape or position, nose shape or position, and body shape or type. Some games favored palettes of thumbnails that previewed potential features or available preset configurations for a given element of a character (e.g., eyes, nose, body). I observed an array of unique interface characteristics and possible combinations of settings within each game's unique set of options.

The images below are examples of parametric interfaces with a variety of complexities. Figure 5.7 comes from 1Quest, which has a simple customization system that only allows customization of gender, species, and profession. Figure 5.8 comes from Blackguards where players choose character profession, gender, and one of five preset human heads per gender. Figure 5.9 shows the initial parametric interface for Dark Souls: Prepare to Die Edition. Figure 5.10 is the initial parametric interface for Saints Row: The Third, after selecting an initial preset body to customize. These last two games possess more complex interfaces than the previous two and allow in-depth customization of a wide variety of parameters.

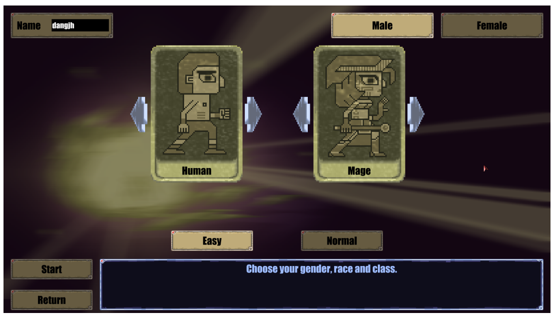

Figure 5.7: Screenshot of 1Quest parametric interface

Figure 5.8: Screenshot of Blackguards parametric interface

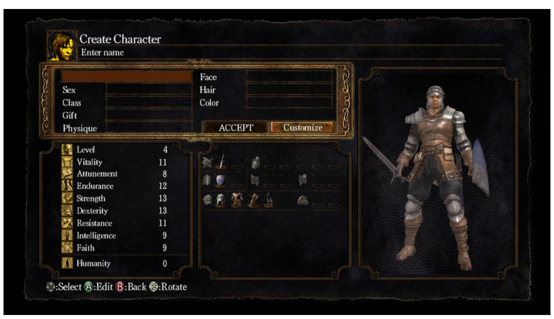

Figure 5.9: Screenshot of Dark Souls: Prepare to Die Edition parametric interface, top level

Figure 5.10: Screenshot of Saints Row: The Third's parametric interface, top level (after initial preset body selection)

5.1.4. Rust

Rust exists outside the previous three categories. Although Rust possesses a rich parametric system for character generation, it does not provide an interface for players to customize their characters. When players begin playing Rust, a unique character is automatically generated. Players cannot customize or replace their characters, even if they delete and reinstall the game. Characters are attached to a player's platform account. Players may only acquire a different character by creating a new account, potentially requiring them to repurchase the game.

I describe Rust as *random parametric default* because it combines the variety of potential performative outcomes of games with parametric interfaces with the limitations on choice of games with single-default characters. As an outlier, I do not include Rust in the following section about representational outcomes across each subset of games. However, I do include Rust's unique interface in my broader analysis that follows.

5.2. Performative representational outcomes

In In this section, I describe the performative and representational *outcomes* of periludic character configuration interfaces. Although these data resemble previous data used to discuss representation in games, they serve an additional purpose more central to the chapter and dissertation. These data establish a presupposition about representation in my sample to support claims about the *consequences* of character configuration interfaces I address in the following section.

Before continuing, I must position the racial and gendered outcomes I describe in this section as my interpretation of these characters. As I describe in chapter three, race or gender can be difficult to responsibly, or authoritatively, assign to virtual bodies. As Shaw writes, "Races, genders, and sexualities are not fixable, knowable, static entities that can be pinned down and represented." (2017, 69), or that can always be authoritatively categorized. Shaw's observation applies all the more to virtual bodies that may not speak for themselves. I provide my interpretations while leaving space for others with different lived experiences whose interpretations of these characters and parametric possibilities may differ.

5.2.1. Games with single-default characters

My observations of games with single-default characters supported previous scholarship and broader claims of racial and gendered representational inequalities in games (CITE 5-6). The largest racial category of single-default characters was *white.* 68%[4] of games with single-default characters had white playable characters, 82% of the *AAA*-coded games, and 57% of the *Indie*-coded games. The next largest racial category was *undeterminable.* 18% of games with single-default characters had playable characters of undeterminable race, 5% of *AAA* games, and 36% of *Indie* games. No other racial category accounted for more than 3% of the games with single-default characters. I observed three characters I coded racially as *green* because they all had this skin-tone and did not reflect any real-world observable racial characteristics.

[4] All percentages are rounded to nearest integer

The largest gendered category of single-default characters was *masculine*. 72% of games with single-default characters had masculine presenting playable characters, 88% of *AAA* games, and 57% of *Indie* games. The next largest gendered category was *undeterminable.* 15% of games with single-default characters had playable characters of undeterminable gender presentation, no *AAA* games, and 29% of *Indie* games. As mentioned in chapter three, the *undeterminable* code does not encompass gender-queer or nonbinary presenting characters, only characters where gendered characteristics were unobservable. The final category I observed was *feminine.* 14% of games with single-default characters had feminine presenting playable characters, 12% of *AAA* games, and 16% of *Indie* games. I coded no characters as any gender-queer or nonbinary category.

The combined data for race and gender can be found in Table 2 below. The intersection of these two demographic categories skews toward whiteness and masculinity, as the previous paragraphs should suggest. 57% of games with single-default characters had *white-masculine* playable characters, 73% of *AAA* games, and 42% of *Indie* games. The next largest demographic was characters of *undeterminable* race and gender. 12% of games with single-default characters had playable characters of *undeterminable* race and gender, no *AAA* games, and 24% of *Indie* games. 9% of games with single-default characters had a *white-feminine* playable character, 8% of *AAA* games, and 11% of *Indie* games. 7% of games with single-default characters had *masculine* playable characters of undeterminable race, 5% of *AAA* games, and 9% of *Indie* games. No other category represented more than 3% of games with single-default characters.

Table 5.2: Combined race-gender demographic codes of games with single-default characters, organized by development tier

	Indie		AAA		Total	
	Sum	%	Sum	%	Sum	%
White Masculine	32	42%	53	73%	85	57%
Undeterminable race and gender	18	24%	0	0%	18	12%
White Feminine	8	11%	6	8%	14	9%
Masculine of undeterminable race	7	9%	4	5%	11	7%
Latine Masculine	1	1%	4	5%	5	3%
White Undeterminable	3	4%	0	0%	3	2%
Asian Masculine	1	1%	1	1%	2	1%
Black Masculine	1	1%	1	1%	2	1%
Green Masculine	1	1%	1	1%	2	1%
Feminine of undeterminable race	2	3%	0	0%	2	1%
Asian feminine	0	0%	1	1%	1	>1%
Arctic-Native Feminine	0	0%	1	1%	1	>1%
Green Undeterminable	1	1%	0	0%	1	>1%
Mixed-race feminine	0	0%	1	1%	1	>1%
Ambiguously non-white feminine	1	1%	0	0%	1	>1%

5.2.2. Games with multiple default characters

My analysis of the representational outcomes in games with multiple default characters will remain an objective of future research. These games presented a challenge I believe requires developing an analytical approach beyond the scope of this dissertation. Games with multiple default characters in my sample had between two and nine playable characters. I realized applying simple weighted statistics would be irresponsible in these games without more complete gameplay knowledge given characters in these games may not be equally enacted. While I do include my observations tied to using multiple default character configuration interfaces in my overall analysis, analysis of the performative and demographic outcomes in these games will need to wait for future work.

5.2.3. Games with parametric customization

My analysis of character configuration in games with parametric customization focuses on the affordances, widgets, and unique options that dictate the possible characters these interfaces may allow players to create. Below I present quantified observations and descriptions of the race- and gender-related characteristics of parametric interfaces and available performative options in my sample. I present qualitative analysis of exceptional widgets, features, or ranges of options within parametric interfaces to reflect on otherwise normative interface design choices. The most striking findings are elements that I only encountered once, or could *not* count.

Race

I observed race in fifteen of the sixteen games with parametric customization. The sixteenth game only allowed the configuration of gender and other narrative elements. Only three games—Saints Row II, Saints Row: The Third, and Saints Row IV—used the *word* race to describe the demographic categories the word commonly marks in everyday usage. In all other occurrences, race was used to indicate distinct species in fictional contexts, such as elves, goblins, lizard people, or extra-terrestrials. Although race has a history of being *perceived* as biologically coded, it's academic and everyday usage is primarily discursive, marking different humans based on ethnic heritage or skin tone rather than its original meaning of biological speciation. That only one game franchise explicitly utilized common racial categories such as Asian, Black, Hispanic, or White to label choices in their interface is itself a major finding. Without explicit racial categories, I could only record the visual characteristics often correlated with them while being reflexive about the inherent problematics of relying on reproductions of visual stereotypes to identify discursive racial categories.

The two primary stereotypical racial correlates I observed were facial characteristics and skin color. While these characteristics are often used to mark common racial categories, they do not definitively indicate membership (e.g., skin color in **Error! Reference source not found.**).

Ten games allowed configuration of facial features. Six had a variety of preset facial configurations which could be chosen as a base to begin customization. Five games had simpler customization options limited to selecting presets and/or altering superficial elements on characters with pre-designated racial characteristics (for example, Figure 5.7 and Figure 5.8 above).

Thirteen games had options to select or customize *skin tone* and/or *complexion*. I observed only two formats of skin tone or complexion customization. The first was an array of preset swatches such as in **Error! Reference source not found.**. The other format was a linear slider with discrete p ositions between two extremes of lightness and darkness as seen in Figure 5.13 (although not always as explicitly labeled). Within these interfaces, each game had its own unique values of lightness and darkness, and which wavelength of *skin* should be the middle, often default. In games with parametric customization, I use *default* to describe the initial character appearance and/or widget settings when first accessing the interface. Defaults are important indications of publisher choices. In parametric interfaces, defaults are a *suggested* character should a player choose not to customize.

The quantity of skin hues varied, as did similarities to common skin tones and the inclusion of uncommon hues such as *green*. Some games provided a small selection of hues, while games such as Saints Row: The Third and Saints Row IV offered 55 color swatches encompassing a wide array of skin tones observable in everyday life as well as shades such as chrome and sapphire (**Error! R eference source not found.**).

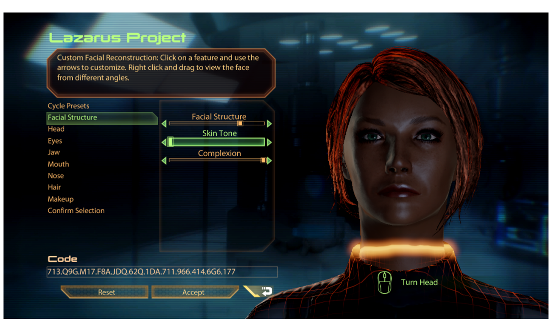

Figure 5.11: screenshot of default female-designated character in Mass Effect 2 with skin tone set to darkest available

Figure 5.12: Screenshot of Saints Row: The Third's skin color swatches

Figure 5.13: Screenshot of Dark Souls II's skin tone bar

Figure 5.14: Screenshot of Saints Row II's racial presets

Table 5.3: available racial features in games with parametric customization where race was observable

	Games with Parametric customization *and* observable race	
	Sum	**%**
Games that used the *word* race to refer to common racial demographics	3	20%
Games that allowed facial feature customization	10	67%
Games that allowed skin tone customization	13	87%
Games with White features available	15	100%
Games with *only* White features available	3	20%
Games with Asian features available	10	67%
Games with Black features available	9	60%
Games with White defaults	12	80%
Games with Black default	1	7%
Games with Random default	1	7%
Games with Undeterminable racial default	1	7%

Some games included parametric presets that applied skin tones to other features stereotypically associated with race, such as hair type and eye, nose, or lip shape. Because racial categories were so rarely explicitly used to label customizable elements, these presets were generally differentiated only by slider position, thumbnail preview, or a number. The Saints Row franchise used explicit racial categories to label four visual presets of facial features with pre-designated skin tones (Figure 5.14) and the more realistic skin tones seen in the upper half of **Error! Reference source not found.**. A similar menu labeled "homeland" in Dark Souls II had unlabeled thumbnails of faces with preset features and assigned skin tones. However, I struggled to correlate them to any familiar racial categories other than white (Figure 5.15).

Available racialized features varied greatly across the fifteen games. Stereotypically white skin tones and features were the only racialized stereotypes available in every game with observable race. Three games featured *only* white skin tones and features. I observed stereotypically Asian features in ten games. I observed stereotypically black features and skin tones as available in nine games. The three Saints Row games explicitly label one of their presets in each game as “Hispanic.” I did not observe preset features or skin tones I felt confident I could precisely code latine in any other games. Four games had unlabeled preset options that I coded as “ambiguously non-white” because I was unable to interpret the intended demographic category other than having a non-white skin tone. Twelve of the fifteen games had white defaults—eleven were white- masculine. One game had a black masculine default. One game provided a random default which was then modifiable. One game had undeterminable racial defaults.

Figure 5.15: Screenshot of Dark Souls II's "homeland" option

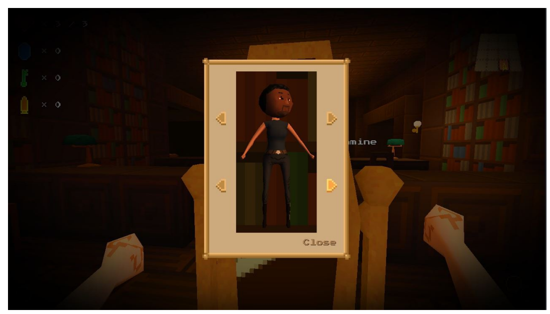

Figure 5.16: Screenshot of a multi-raced, non-binary gendered character in Eldritch's character configuration interface

The game Eldritch provided a unique interface for assigning race. Eldritch’s customization was limited to selecting preset heads which were each uniquely raced and gendered and preset bodies which were each uniquely raced, clothed, and gendered (Figure 5.16). This interface allowed for multi-racial bodies in the literal sense that the head and body of a character may present different racial categories.

Gender

Gender was observable in all sixteen games with parametric customization. Like race, gender is increasingly recognized as performative rather than a rigid biological category, originating from the work of critical scholars such as Butler and Sedgewick (Butler 1990; Sedgwick 2002). As discussed in chapter three, sex refers to biological characteristics that are less useful when examining virtual bodies. Even when games in my sample used the *word* “sex” to label customization choices, it only appeared to mark visually performative rather than physiological traits.

In twelve of the sixteen games with parametric interfaces, the first choice when creating a character was gender (e.g., Figure 5.17). Gender was still the first customizable option in two of the remaining games after one of six parametrically preset bodies with distinct racial and gendered characteristics were selected to act as a baseline for customization. One game's customization consisted of superficially customizing pre-gendered characters (Figure 5.18). The sixteenth game, Eldritch, uniquely incorporated gender into the previously described choice of preset heads and bodies (Figure 5.16).

Figure 5.17: Screenshot of Mass Effect 2's new game/gender selection screen

Figure 5.18: Screenshot of Borderlands 2's character selection/customization screen

Figure 5.19: Screenshot of Shadowrun Returns' character configuration first screen/gender selection

Figure 5.20: Screenshot of Shadowrun Returns' character configuration final step: visual characteristics

Fourteen of the sixteen games had masculine defaults. One game had several defaults only visible and customizable after gender, species, and profession were selected (Figure 5.19 beginning of customization, Figure 5.20 access to visual characteristics). One game had a randomized default that could be masculine or feminine. No games had a static feminine default.

Table 5.4: Overview, available gendered choices in games with parametric customization

	Games with Parametric customization	
	Sum	**%**
Games where gender was the first characteristic that could be customized	14	88%
Games with masculine defaults	14	88%
Games with Random default	1	6%
Games with feminine default	0	0%
Games with a binary choice of gender	14	88%
Games that permitted some level of nonbinary presentation	5	31%
Games that did not constrain customization in any way based on gender	2	13%
Games that explicitly included a nonbinary choice in the interface design	1	6%

In fourteen of the sixteen games with parametric interfaces, gender was a binary choice that constrained which other elements could be customized. Gender assignment determined access to different body types and how many of which hair styles, makeup, and clothing styles could be assigned. Saints Row: The Third even introduced a "sex-appeal" slider to the series which adjusted the mass of either breasts or crotch, depending on the assigned gender of the character (e.g., crotch in Figure 5.21).

The Saints Row games permitted several exceptional outcomes that highlight gendered assumptions baked into the other parametric interfaces I observed. For example, ten games had options for facial hair, however only the three Saints Row games allowed it to be applied regardless of assigned gender (Figure 5.22). The Saints Row games were the only games that allowed masculine gendered characters to wear makeup (Figure 5.23). The Saints Row games were the only ones that permitted access to all clothing, hair styles, and tattoo options regardless of assigned gender. The characters produced in ten of the sixteen games with parametric interfaces presented some oral component ranging from grunts and exclamations to punctuate basic action to full narrative dialogue exchanges. The Saints Row games, however, were the only games that allowed the assignment of one of a selection of more masculine presenting or more feminine presenting voices to any character regardless of assigned gender.

Figure 5.21: Screenshot of Saints Row: The Third sex appeal slider

Figure 5.22: Screenshot of Saints Row: The Third's facial hair selection

Figure 5.23: Screenshot of Saints Row: The Third's makeup selection

Figure 5.24: Screenshot of Saints Row II's body shape bar

Only two games made unconstrained nonbinary gendered presentation a feature of their parametric interface design: Saints Row II and Eldritch. Not present in later games in the series, Saints Row II's "body shape" slider bar (Figure 5.24) is a unique interface design element. Although Saints Row II does initially require players to assign a gender before gaining access to this bar, the choice does not constrain any following modifications. Instead, gender selection only determines the starting position on the 101-position body shape bar at either 25 or -25 between the extremes of 50 for most masculine and -50 for most feminine. Although I acknowledge the attachment of positive and negative value to gender is notable, addressing the critical implications of this choice is beyond the scope of this dissertation. Importantly for this chapter, however, is the body shape bar includes a zero-position occupying a numerically neutral gender presentation as a feature of the interface. The only visual distinction between 1, 0, and -1 is that a bra appears on the character starting at -1. Saint's Row II is the only game in my sample that presented gender as more than a binary choice and provided a spectrum with an explicit, a-gendered option.

Eldritch provides a unique opportunity for gender expression because of the way it dissolves all racial and gendered parametric options into the unrestricted selection of head and body combinations (Figure 5.16). Heads and bodies are split between four each of masculine and feminine presenting characteristics. Heads may have facial hair or make-up; bodies may have breasts or not. Eldritch and its parametric system are unique in that rather than require gender selection at any point, any head and any body can be selected, in possible subversion of gender norms.

Although five of the other games allowed some level of nonbinary gender presentation with time and effort, the Saints Row franchise and Eldritch were the games whose parametric customization integrated nonbinary options into the design of the interface. Saints Row II is the *only* game that allowed an *explicitly designated* a-gendered, androgynous, or nonbinary character.

5.3. Character configuration implications

Character Configuration interfaces are the most visual threshold I describe in this dissertation. In these interfaces, players *see*, and potentially decide, who the game they are about to play will be about. These interfaces are where, to recall Taylor's "becoming a gnome" from chapter two (2006), players may become their characters or at least temporarily take on the role of a character for gameplay purposes.

Genette does not describe any direct peritextual analogies of character configuration. The best analogy I could find on my own comes from my childhood and the book pictured in Figure 5.25. As the cover says, this book is "starring your child," and comes with a simple character configuration interface in the form of a small hole punched through each page. A parent attaches a picture of their child on the inside of the back cover, lined up with the hole, and the book becomes a series of exciting first person, fictional, vignettes about the child (e.g., Figure 5.26).

Figure 5.25: My copy of this book (Merrybooks, 1985).

Figure 5.26: It is two-year-old me, undersea, in that book: "Hey, look at me!"

In books, authors decide how the main character will perform. Even in my example in Figures Y and Z, reader influence is heavily limited and has no effect on narrative or aesthetics elements of the text outside the oval hole. Books are not an inherently visual medium and do not always provide imagery or describe their characters in detail. Readers may imagine characters in wildly different ways compared to each other or the author's intent, either on their own or through epitextual productions such as fanfiction or fan-art (Thomas 2011; Rodenbiker 2014; Barnes 2015; Coppa 2017; Floegel 2019; Connor 2019). However, this re-figuring of characters in books occurs externally to the text. We cannot observe the limits of reader interpretations on the pages of most books the way we can observe the limits on the visual rendering within which players create their digital game characters.

In digital games, publishers and players co-construct main characters through character configuration. Character configuration interfaces are a contact point where publisher priorities and player feelings about the characters they will play come together in gaming practice. Publishers dictate the limitations on which virtual bodies are *permitted* in their games. Players play along or contend with those limitations to participate in gameplay. Examining *how* character configuration interfaces constrain and mediate embodied performative potential provides an opportunity to investigate how they influence gaming and game design.

5.3.1. Manifesting interpretative variance

Character configuration emphasizes how periludic interfaces provide opportunities to re-examine the nature of digital games, how we study them, and how we play them. Character configuration refers to how characters are visually configured in parametric interfaces and may be narratively and performatively re-figured through gameplay, even with single-default characters. Character configuration acknowledges how games inherently involve players in the final decision of who games can be about in more clearly observable and structural ways than in previous media.

The interpretive influence of players on the configuration of the characters they take on materializes theories couched in older media. Barthes' philosophical rejection of a singular authored meaning in a work (1977) and Eco's notion of the *open work* (1989) are *observable* when players may play through the same game with radically different customized characters representing radically different interpretations of who their games are about. Other scholars have applied Barthes and Eco to narrative and other content *in* games in much the same way they have been applied to previous media (Lauteren 2002; Simons 2007; T. Tanenbaum and Bizzocchi 2009; T. Tanenbaum 2015). However, character configuration interfaces manifest the philosophies and theories of Barthes and Eco into the technical structure of games by formally incorporating players into the co-creation of gameplay outcomes.

Character configuration interfaces allow players to integrate their interpretations into the game, the text, in a way previous media do not. Character configuration interfaces integrate player interpretations into gameplay in a way that is not yet fully understood. With rare exception (Figure 5.26), readers can *only* interpret characters in books. Readers can only alter protagonists by re-writing or modifying a text. For example, by scribbling over each mention of a character's name and details in an obvious after-publication addition. Character configuration, however, allows players to modify the details of their characters and give them all sorts of personally important names (Crenshaw and Nardi 2014), which become part of the formal progression of gameplay. Character configuration allows players to make gamplay their own in way previous media does not. The computational and interactive nature of digital games and character configuration interfaces allows players to explore the boundaries of possible performance and interpretation as an intrinsic characteristic of digital games and game design.

5.3.2. Performative Priorities

Analyzing the content and format of character configuration interfaces provides an opportunity to observe how attitudes about race and gender, for example, virtually materialize in games, game characters, and game development. Performative limitations imposed in periludic character configuration interfaces indicate what publishers prioritized in the development process.

Publishers are subject to finite development timelines and resources that limit what can be included in games. Publishers must create limits on performative choice in their games. Character configuration interfaces cannot contain *all* possible performative possibilities.

Character configuration interfaces, especially parametric interfaces, often appear visually analogous to the menus that control audio, visual, difficulty, or accessibility settings. Publishers use menus and the various widgets that comprise parametric configuration interfaces to efficiently impose limitations. These limitations take shape based on available options and the format in which they are presented. Complex demographic and visual characteristics are simplified to positions on a slider or selections from a list. As described above for example, several of the games I observed presented race through a selection of skin-color swatches (e.g., Figure 5.12).

Providing a range of skin tones may help players to make their own judgements about which races may be available. However, it is unclear whether using a variety of un-racially-labeled skin tones suggests publishers are prioritizing racial inclusion or attempting to avoid dealing with race in explicit terms. Including a wide range of skin tones may index more diverse racial demographics, it can be challenging to assign or identify race based only on skin tones. As I describe in a chapter three and in a previous publication (Gardner and Tanenbaum 2018), or as Higgin puts it succinctly in his analysis of blackness in EverQuest and EverQuest 2, "what shade of skin truly is black, after all?" (2009, 5). The answer to this question is wrapped up in cultural ideologies of race that may vary between researchers, publishers, and players. Without the explicit common racial categories *included* only in the Saints Row games, it is difficult to claim which races a position on a slider or a color in a box are meant to represent.

Undeterminable default characters may similarly allow players to interpret characters as diverse racial identities while avoiding explicit inclusion. In a previous article, Tanenbaum and I describe how interpreting "undeterminable" characters as contributing to diversity can require additional effort when presented within familiar narrative tropes and a representational landscape dominated so pervasively by white-male default characters (Gardner and Tanenbaum 2018).

Publishers who include diverse skin tones while excluding explicit use of racial categories are prioritizing the *appearance* of diverse inclusion. Games are forced to neatly organize racial characteristics into selectable menu options. However, as Nakamura writes, menus inherently "work to deny the existence of ways of being raced that do not fit neatly into categorizable boxes" (2002, xvii). Racial identities and demographics cannot be reduced to a color value. More diverse racial representation requires more than the inclusion of relatively diverse skin tones packaged into a range of boxes in character configuration interfaces.

Robust gender identities are similarly constrained or denied in the interfaces I studied. Most of the games I observed presented gender as a binary menu option. Only Saints Row II and Eldritch didn't constrain gender to a binary menu option. Only five other games permitted *some form* of non-binary gender presentation in their parametric interfaces.

Parametric interfaces that allow players freedom to interpret their character's gender presentation with more flexibility are good. However, in these five other games that permitted more flexible gender presentation, characters are still *assigned binary gender* as far as the interface is concerned, and as far as gameplay and narratives may treat them. This menu-driven gender assignment still dictates which customization options are available and dictates elements of gameplay.

The Saints Row games are exceptional precisely because of how they do *not* implement many of the limitations other games do. Returning to development timelines and resources, making an interface so that some options are available or not based on an initial choice of gender requires additional labor to either create filters or even separate menu choices and additional widgets that only affect characters made with one gender. I cannot know for sure whether the Saints Row publisher chose not to implement gendered limitations to reduce labor costs or to be more inclusive. However, the ability to create characters that do not conform to binary gender expectations in these games did not happen merely by chance. Enforcing stricter gendered constraints was not a priority of the publishers.

Eldritch's character configuration interface is a similar example of simply *not* implementing limitations. I cannot know whether or not Eldritch allows players to assign heads and bodies with different races and genders because the publisher chose to push the boundaries of gaming inclusion or because they did not expend additional labor to implement filters that limited available heads or bodies based on race or gender. However, implementing any sort of restrictions on head body combinations was not a priority for the publisher.

Nakamura's description of "menu-driven identities" heavily informs my analysis in this chapter (2002). She specifically emphasizes the power of interfaces to constrain performative potential. I read her analysis as an early consideration of periludic interfaces. Nakamura de-centers players to observe different forms of dis-embodied identity performance enabled by text interfaces. I re-embody her analysis within periludic character configuration interfaces that encourage or restrict certain ways of visually rendering or enacting race and gender. However, I might alter Nakamura's phrasing to menu-driven *performances* because concepts of identity are beyond the scope of this dissertation. I only observed the visual embodiments to which we may ascribe identities.

Examining how periludic character configuration interfaces label, present, constrain and *drive* representational outcomes highlights how the burden of inclusion cannot *only* be on players interpreting representation beyond the semantics of an interface or on characters of undeterminable race and gender. I am uncertain whether games that permit the *interpretation* of diverse performances without using explicit racial and nonbinary choices in their interfaces count as inclusive. I do not have data to suggest whether open interpretation or explicit inclusion is preferable in the long term. I recognize that explicit inclusion potentially means more explicit exclusion. To paraphrase Nakamura, menus or interfaces that mediate performance always serve to narrow "the field of representation" (2002, xvii), and always constrain possibility rather than expand it. However, if more games used explicit labeling, and different formats for customizing demographics such as Saints Row II's body shape bar, there would be less need to speculate or interpret who publishers have or haven't included.

5.3.3. More than representation

Character configuration interfaces are how publishers communicate who is permitted to be in games. Statistics of default characters taken in aggregate display the limits within which the games industry will cast main characters. The constraints of parametric customization interfaces display the bounds within which publishers will allow players to influence that casting.

The data on characters and customization I describe above is about more than representation. I am concerned with what that data can tell us about character configuration interfaces. The percentages in Table 5.2 indicate the probabilities of what virtual embodiments players may enact in those games. Table 5.3 and Table 5.4 describe some of the ways players may be constrained in their performative choices in games with parametric customization interfaces. These tables all indicate possible *outcomes* of character configuration interfaces and/or the performative constraints players contend with as a condition of accessing gameplay.

These probabilities can take on different value for different players. Consider that in the games with single-default characters in my sample, a player who identifies as white and masculine is six times more likely to take on the role of a character that shares their demographics than the next most common determinable demographic combination (white and feminine). A white and masculine player is 17 times more likely to play as a character that shares their demographics than a masculine latine player—the most represented demographic of color in these characters. Players who identify as Asian or Black and masculine are as likely to play a *green* (inhuman) *masculine* character as they are one that shares their demographics. A player who identifies as feminine and any determinable non-white racial demographic is more likely to take on the role of a *green masculine* character than someone who shares their own non-fictional demographics.

Players are not 17 times more likely to *be* white and masculine than latine and masculine. Players are not 43 times more likely to be white and masculine than Asian or Black and masculine. In fact, per capita, many demographics of color are more likely to play games than white folk (Duggan 2015; Nielson Company 2017).

Comparing my statistics to the population of the US, as Williams et al. do (2009), can lend some perspective—although arguing whether or not these numbers should be directly analogous or not is beyond the scope of this dissertation. According to the US census, White, not Hispanic or Latino, male-identified persons account for roughly 30% of the population (Frey 2020; U.S. Census Bureau QuickFacts n.d.), yet they account for 57% of single-default characters in my sample. White, not Hispanic or Latina, female-identified persons also account for roughly 30% of the population (Frey 2020; U.S. Census Bureau QuickFacts n.d.), yet account for only 9% of single-default characters. Hispanic or Latino, male-identified persons account for between 9-13% of the population (Frey 2020; U.S. Census Bureau QuickFacts n.d.), yet account for the best-represented demographic of color in single-default characters in my sample at only 3%.

The weight of these statistics on gameplay experience will vary by player. Previous scholarship that has investigated how players *feel* about representation has mostly focused on marginalized players who lack in-game representation (Shaw 2014, 2017; Passmore, Birk, and Mandryk 2018; Passmore and Mandryk 2018; Reza et al. 2019; Nguyen et al. 2020; Reza et al. 2020). Passmore et al. describe the ways that representational inequalities have negative psychosocial effects on players of color by reproducing and reinforcing broader structural forces of racism and discrimination (2018). Nguyen et al. explore how player feelings about representation *in* games can start with cover art (2020). Shaw describes the "acceptance" her queer participants and participants of color have toward poor representation given a lack of choice (2014, 2017). Passmore & Mandryk describe a similar "learned neutrality" felt toward a lack of options for self-representation (2018). Shaw and Passmore & Mandryk argue underrepresented players must adopt these perspectives as a sort of defense mechanism, if they wish to play games at all. Reza et al. extend this analysis by using "quasi-acceptance" to describe observations of similar apparent acceptance co-existing with hope for more diverse representation and happiness when underrepresented players find characters that look like themselves (2020). These scholars all emphasize forms of concession related to character representation that players of color exercise in everyday gaming

Character configuration interfaces provide an opportunity to observe representational statistics as a transactional gameplay outcome, rather than simply a characteristic of games. I focus on character configuration as a periludic function to highlight the trade-offs that may occur when diverse players take on characters within the context of the representational limitations in games the above statistics help to put into perspective.

In *Rules of Play,* Salen and Zimmerman write that, "Limitations in games help shape the space of *possibility*" (2003, 87, emphasis added). Although they are speaking more generally, limitations in default character choices or on body types, skin tones, hair styles, or other visual elements of parametric character configuration place limits on the kinds of games and gameplay experiences that are possible.

Rust uniquely provides evidence for how much character configuration can dictate how players experience gameplay and how representation in games can come to matter to players. This evidence comes from the evolution of character configuration in Rust over time. As described above, I coded Rust in its own category of *random parametric default* because each player's character is uniquely customized yet unchangeable. During my data collection, the variety of potential performative outcomes included a range of randomly assigned skin tones, visible genitalia, and body types. Rust is the only game in my sample where avatars can be viewed completely nude, starting the game in that state.

When initially released to the public in beta form, all Rust avatars were white males. As development progressed, however, game updates retroactively applied increasing racial and gendered diversity to characters. Many players were unhappy with these changes and requested refunds, bombarded the game with poor reviews, and sent heated open letters to the publisher. Changes to avatars had no impact on in-game mechanics. Although the gameplay did continue to evolve in these updates, the complaints of unhappy players centered around topics such as how unacceptable it was to now have "to be a Fucking Black guy," or female (Grayson 2015). Players who were initially happy with Rust and its gameplay could no longer enjoy it because a change in the way characters were configured despite no other notable narrative or mechanical changes.

These players *rejecting* Rust demonstrates the influence of character configuration can have on player experience. These players were not rejecting gameplay mechanics, or narrative, or level design. These players were insisting that how the game configured their characters made the game unplayable for them. They had been enjoying the game for months until they were suddenly required to play as a character of color and/or a woman.

The overwhelming majority of those who complained and demanded refunds were white males complaining about the demographic shifts of their characters (Garza 2016; Grayson 2015; L.

Johnson 2016). The complaints of these players amount to losing what Passmore et al. refer to as the "privilege of immersion" (2018), or the privilege of commonly demographically resembling default characters in games. My probabilities above highlight just how much more likely players of color and women are to be in a mirrored situation of the one these Rust players found themselves in when faced with single-default characters. The complaints of these players unwittingly make a case for the burden of players of color and women who so much more rarely have the privilege of *choosing* to play a character that resembles them.

These disgruntled with Rust white-masculine players are trapped by their expectations of who games should be about the same way scholars above describe players of color being trapped by their expectation of *not* being represented. Shaw argues, "representation in media is a form of evidence for what forms of being in the world are possible" (2017, 58). She is arguing for why better representation is important to players who are not currently adequately represented and for everyone to be capable of accepting broader diversity. Her insight highlights a self-fulfilling prophecy within which gaming appears to be trapped: Because so many games are about white masculine characters, the industry thinks games should be about white masculine characters. Because so many games are about white masculine characters, players think their games should be about white masculine characters.

Who players may enact in games can influence every other element of that game from start to finish. Considering broader identities as possible outcomes of character configuration shifts the entire landscape of gameplay. My data shows how *possible* it is to inhabit different forms of being in these games. My analysis of Rust provides an example of how character configuration can re-figure how a player experiences a game, for the worse. Character configuration can be used to reflect on those moments where it is impossible for players to *take on* a body that resembles theirs in games, or to explore different ways of being. To be more inclusive, games can't simply *be* more diverse, they must re-examine the limitations they enforce on performative possibility and encourage players to take on more diverse roles before gameplay even begins.

5.3.4. Play on the boundary of gameplay

Pushing the limits of the performative constraints can produce forms of emergent play on the periphery of more formal gameplay that emphasize the periludic nature of character configuration interfaces. Players may spend hours creating their vision for a protagonist, recreating their own likeness, or exploring other forms of playful or creative expression. All of these endeavors may occur without beginning familiar gameplay activities.

In my own data collection, I accessed 200 games yet spent most of my time in interfaces I could not describe as elements of gameplay. In games with parametric customization interfaces especially, I spent most of my time moving in and out of menus, recording every modifiable feature or possible selection. I would be difficult for me to say that I *played* many of these games. To once again echo Taylor's description of "becoming a Gnome" (2006), I conducted my observations in a constant state of becoming and rarely of playing. When Taylor says "becoming a Gnome," she is foreshadowing the moments in-game when she will simply *be* a gnome.

If a player were to spend hours creating a collection of impressively customized characters in the popular MMO World of Warcraft (WoW), yet never press the "Enter World" button (Figure 5.27), could they say they had *played* WoW? Certainly, they have played with the character configuration interfaces or perhaps some emergent game of their own creation. The semantics of the interface, however, seem to indicate their current status is *outside* the game world. This player has not yet participated in any of the activities that might be used to describe or define WoW gameplay.

The "creature creator" for the game Spore provides a particularly illustrative example of the quasi-detachment of character configuration from games and gameplay. The creature creator is the equivalent of character configuration, in that creatures are the main characters of Spore. The creature creator was released online for free months before the official launch of the full game and was popular despite a lack of official gameplay. It was *not* a Spore demo. The creature creator provided early access to Spore's parametric creature customization interface (e.g., Figure 5.28). Many people, enjoyed playing with the creature creator without ever purchasing the retail release of the game. That is, we were *incapable* of experiencing Spore gameplay. I spent hours in the Spore creature creator. I have never played the game Spore.

Figure 5.27: Screenshot of World of Warcraft interface between character creation and gameplay. None of these characters have been played.

Figure 5.28: Screenshot of the McElroy Brothers' creation in Spore from episode: "Creating the Sequel to Dogs in Spore."

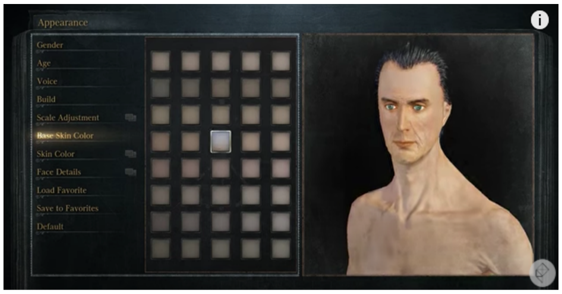

Figure 5.29: Screenshot of default "middle slider" character in bloodborne

Figure 5.30: Screenshot of Monster Factory's "Toucan Dan the Toucan Man" created within the Bloodborn parametric system (McElroy and McElroy)

Players create forms of emergent play centered on character configuration. Popular YouTube series, *Monster Factory,* is based entirely on playing with the limits of parametric interfaces. *Monster Factory*'s motto, "no middle sliders," pushes against the default or numerically averaged features often represented by the center of slider widgets (McElroy and McElroy n.d.; Stimson 2017). The show revolves around exploring, critiquing, and playing with the limits of these interfaces (e.g., Figure 5.29 becoming Figure 5.30).

Character configuration occupies a position that is simultaneously a part of, and apart from, formal gameplay. My data collection, my query about WoW, Spore's creature creator and examples of emergent play such as *Monster Factory* all highlight activities quasi-detached from familiar gameplay. These examples emphasize how a periludic lens helps identify aspects of the broader activity gaming that occur *between* players and games.

5.4. Summary

Character configuration interfaces mediate translations and constructions of performative possibility. These performative possibilities include representational, interpretative, and playful outcomes. Character configuration interfaces give players greater influence over the characters they enact across the medium of games. However, the representational limitations expressed by default characters and parametric constraints still reproduce broader inequalities with which games and other visual media continue to struggle (H. Gray 1995; Singer 2002; Griffin 2006; Onwuachi-Willig 2007; Davis and Needham 2008; Higgin 2009; hooks 2009; D. Williams et al. 2009; Kafai, Cook, and Fields 2010; Benshoff and Griffin 2011; Howard and Jackson II 2013; Shaw and Friesem 2016; Passmore et al. 2017; Gardner and Tanenbaum 2018).

Intentionally or not, publishers communicate their representational and performative priorities through character configuration interfaces. In some games, character configuration offers minimal influence over the performative characteristics of characters. In other games, character configuration can be a lengthy negotiation between players, buttons, sliders, presets, and other constraints. Sometimes, character configuration becomes a site of subversion or emergent play. In every case, the activity that occurs in character configuration interfaces periludically dictates central aspects of what players may see, do, or *become* during gameplay.

Chapter 6.

Controllers

Controllers are the primary physical interface for all digital games. In Chapter three, I explained that I consider any physical interface used as a means of accessing and participating in gameplay a controller. Controllers are a periludic threshold that dictate how players may navigate games, what sorts of inputs game designers may expect to utilize, and what physiological characteristics players must possess to participate in digital gameplay. Controllers are the instruments that players use to interact with every aspect of digital game software and that establish which forms of input are acceptable for gameplay.

Controllers can take many forms. Some controllers rely on buttons and directional widgets to translate physical inputs into digital phenomena. In the previous chapter, I applied McArthur, Teather, and Jenson's use of *widget* to describe "interaction elements within [a] graphical-user interface" (2015, 232), such as buttons, menu sliders, or swatch palettes. In this chapter, I expand my use of the term to include interactive elements of the physical user interfaces that are controllers. I use directional widgets to describe various two-way or more-way directional interface elements, marked by an afforded range of movement and/or indicated by the presence of arrow icons. Although directional widgets can take several forms, the two most common I observed were four or eight-way multi-axis direction pads (e.g., on the left side of Figure 6.1 and Figure 6.2), and various sorts of sticks that can support up to 360 degrees of directional inputs (e.g., thumb sticks such as the center of Figure 6.2 or joysticks such as Figure 6.3).

Figure 6.1: Example of directional pad or d-pad on the left of controller

Figure 6.2: Examples of a different style d-pad on the left and two thumbsticks at the lower center of the controller

Figure 6.3: Example of joystick in center of controller

Figure 6.4: Controller equipped with gyros and light sensor for motion.

Figure 6.5: Photo of Nintendo Entertainment System, Light Gun controller,1985, left-side

Figure 6.6: Playing the game by pointing the light gun at the screen and pressing a trigger button

Some controllers rely on motion or light as input mechanisms. Motion control refers to controllers equipped to translate bodily motion into in-game action, often with the use of accelerometers or gyros as inputs. For example, players manipulate the position and movement of the skateboard controller in Figure 6.4 with their feet and hands while playing Tony Hawk: Ride to have their in-game character manipulate an in-game skateboard. Light gun controllers, such as pictured in Figure 6.5, use a light receiver in the gun to analyze position relative to the screen when the trigger is pulled to determine the appropriate gameplay outcome (e.g., me using a light gun to shoot ducks in the classic Nintendo Entertainment System game, Duck Hunt, Figure 6.6). Newer light-based controllers may rely on some form of infrared transmission to translate position, angle, and inputs to gameplay.

Controllers are the most tangible threshold I describe in this dissertation and the interface most intended to *direct* gameplay in the literal and periludic sense. Controllers are what allow players to interact with digitally constructed interfaces such as those I address in the previous two chapters. Controllers are where players come into *contact* with digital games and gameplay.

Genette does not describe any peritextual analogies to controllers in books. Yet, I argue there are peritextual examples that direct reading in a tangible fashion similar to controllers. For example, I consider book-bound ribbon bookmarks a peritextual navigational mechanism (e.g., Figure 6.7). Even pages are a functional characteristic of the platform of books that readers turn to physically navigate through a text. However, the best analogy I am aware of is the yad, or Torah pointer (e.g., Figure 6.8). Yads are textual peripherals hanging from the Atzei Chayim—the wooden dowels around which a Torah scroll is wrapped that function like bindings do for books. Jews are not permitted to touch the text of the Torah with their hands. Instead, they use yads to mediate their contact with, and direct their reading of, the text.

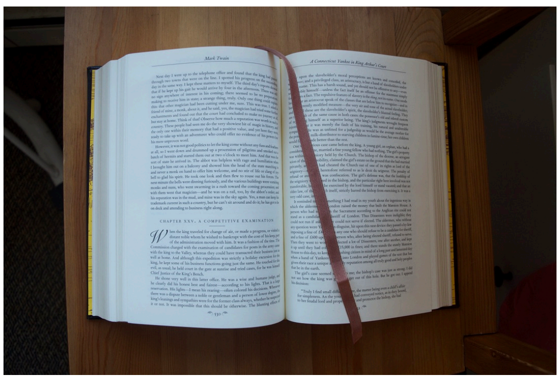

Figure 6.7: Photo of a book with a book-bound ribbon bookmark. Photo by author.

Figure 6.8: an example of someone using a Yad, or Torah pointer, to read. Photo by cottonbro, retrieved from pexels.com.

In digital games, players are incapable of directly touching or influencing gameplay with their hands. Players use controllers to mediate their contact with, and direct all elements of, gameplay.

In *The Control Revolution,* historian and sociologist James Beniger defines control as "purposive influence toward a predetermined goal" (1986, 7). He continues that most dictionaries and common uses of the word imply "two essential elements: *influence* of one agent over another, meaning that the former causes changes in the behavior of the latter, and *purpose*, in the sense that influence is directed toward some prior goal of the controlling agent" (Beniger 1986, 7, emphasis in original). Beniger is concerned with how information technology influences the changes we might observe in society. He writes, "technology defines the limits on what society *can* do" (Beniger 1986, 9, emphasis in original). However, Beniger is not speaking deterministically. Rather, his argument resembles that of Salen and Zimmerman, when they write "Limitations … shape the space of possibility" in games (2003, 87).

To Beniger, “Information processing and reciprocal communication” are essential and complementary elements of any form of control (1986, 8). Information processing refers to any of the procedures of information transfer and verification. Reciprocal communication refers to how inputs and their verification produce feedback. Beniger explains the etymology of control as coming from the “Latin verb *contrarotulare,* to compare something ‘against the rolls,’ the cylinders of paper that served as official records in ancient times” (1986, 8, emphasis in original). That is, information inputs must be processed and verified, and the outcome of that verification must be communicated.

If control is the process of exerting purposeful influence over something, a *controller* is that which exerts that influence. In digital games, controllers serve to exert the influence of players on gameplay. Controllers process inputs from players and verify what outcome each input should produce against the underlying code of the game software. Any resulting in-game jump, attack, spell, dance, or other action provides reciprocal communication to the player that their command was processed.

In this chapter, I describe how controllers serve as a periludic element of games that dictate how players and publishers alike translate their intent into the activity of gameplay. I examine 136 controllers from 61 platforms released from 1972 to 2018. As stated in chapter three, this sample is taken from the historical games collection at UCI and includes at least one controller belonging to every major home-gaming platform released in North America during this time period. I use these data to analyze how controllers operate as more than mere components of gaming platforms. I investigate how interactive elements such as buttons, sticks, and motion control each afford different sorts of gameplay. I chart the introduction and disappearance of specific widgets and features of controllers, such as types of directional widgets and wireless capabilities, alongside notable examples of game design and shifts in the game industry. I examine the ways each widget or feature may expand or constrict the ways that players may physically connect with games.

6.1. Controller sub-categories

In chapter three, I classified the controllers in my sample into subcategories based on the type of platform they represent: stationary, handheld, or versatile. I observed 104 controllers belonging to *stationary* platforms, 21 *handheld* platforms, and 11 *versatile* platforms that could function as stationary and/or handheld. A timeline-chart of my complete sample can be found in Appendix C.

6.1.1. Stationary platforms

Controllers for stationary platforms were the most common in my sample. Stationary gaming platforms are any of the many mainstream gaming platforms that require a television or monitor and external power supply to be played (e.g., Figure 6.9 and Figure 6.10). These platforms *can* be moved between gaming sessions. However, their need for external power and audio/visual output to function tethers them in-place during gameplay.

Figure 6.9: a Sega Master System (left) and a Nintendo Entertainment System (right) hooked up to a CRT television, photo by Matthew Paul Argall (Argall 2011)

Figure 6.10: Although the platform itself is not visible, this image captures playing a Sony Playstation 4 on a television, photo by Jan Vasek (Vasek n.d.)

6.1.2. Handheld platforms

Handheld gaming platforms cover a wide array of self-contained gaming devices. Handheld gaming platforms are their own controller and have their own audio-visual output capabilities (e.g., Fig. K and Fig. L). These devices may become temporarily tethered in-place during gameplay while plugged into a wall to recharge an internal battery or to draw power due to depleted disposable batteries. Provided a handheld device's internal power is charged, gameplay on these devices is not tethered to any location or an external audio/visual output (e.g., a television).

Figure 6.11: Photo of Mattel Battle Armor, 1978, top

Figure 6.12: Photo of Nintendo GameBoy, 1989, top

6.1.3. Versatile Platforms

Versatile gaming platforms are effectively handheld devices that have the ability to operate as stationary devices by projecting gameplay to a television and/or supporting separate controllers. (e.g., Figure 6.13). They have the capacities to operate as self-contained gaming devices and the ability to tether and support external audio/visual outputs for stationary play.

one unique case from my sample, the Sega Dreamcast Visual Memory Unit (VMU) is at once a platform and an accessory to another platform (Figure 6.14). I coded the VMU as versatile because while it is always played in a handheld mode, it only functions in symbiosis with the Sega Dreamcast, a stationary Platform. Most of the time, a VMU passively docks in a Dreamcast controller's memory+ port until something occurs that allows or requires the player to remove it to play a VMU-specific mini game. Although players may *only* play VMU mini games in a handheld mode, they must always load these games from a Dreamcast game immediately prior. In addition, the outcomes of these minigames often have an effect on a stationary Dreamcast game when the VMU is re-inserted to the memory+ port.

Figure 6.13: Photo of Sega Nomad, 1995, top

Figure 6.14: Photo of Sega Dreamcast VMU, 1999, top

6.1.4. Subset Representation

Although *all* controllers are periludic, different subsets support different periludic potentiality. For example, controllers that plug into stationary platforms generally do not have as many affordances as handheld and versatile controllers that are at the same time platforms. As I will describe in greater detail below, whether a device is tethered in place or capable of moving about physical space more freely can have an important influence on how games can be played.

Because of the practical and technical differences between subsets, because the representation of each subset is not equal, and because I am looking at a history of controllers rather than a temporal snapshot, below I visualize each subset over time. Fig. O charts the number of unique controllers in my sample by subcategory over time. Fig. P describes the percentage of controllers from each subcategory per year of release. These charts provide a baseline context for my findings that at times highlight differences between subsets or focus only on a single subset.

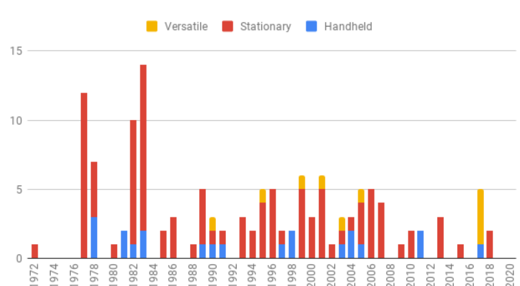

Figure 6.15: Total stationary, handheld, and versatile controllers over time

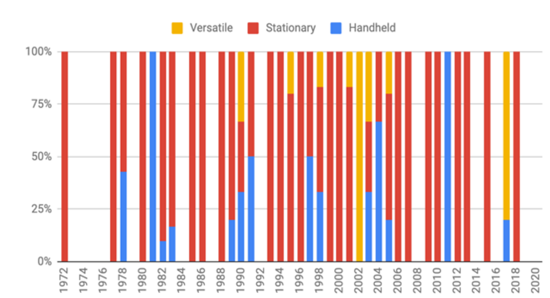

Figure 6.16: Stationary, handheld, and versatile controllers as a percentage of controllers per year.

6.2. Widgets: Inputs and Outputs

I apply widget to the variety of interface elements that enable controller inputs and outputs such as accelerometers, buttons, dials, pads, ports, screens, speakers, sticks, switches, triggers and vibration capabilities. Each type of widget affords a different sort of interaction. For example, accelerometers detect controller movement. Buttons often afford a binary input of either depressed or not, while dials, sticks and triggers may afford a pressure sensitive range from not depressed, slightly depressed, to entirely depressed. Sticks often afford a wider range of movement than d-pads. I observed a greater variety of widgets and a trend toward more average widgets per controller over time in my overall sample and within each subcategory (Figure 6.17, Figure 6.18, and Figure 6.19).

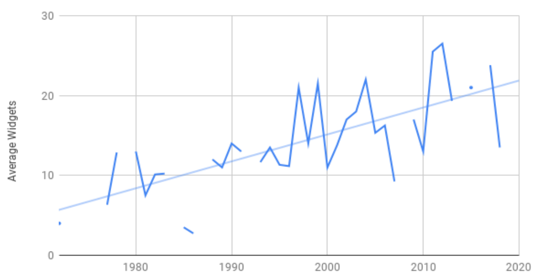

Figure 6.17: Average widget count per controller by year over time

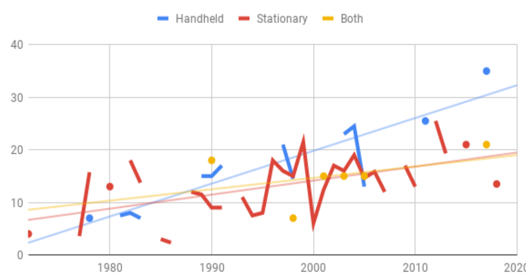

Figure 6.18: Average widget count per controller per subcategory by year over time

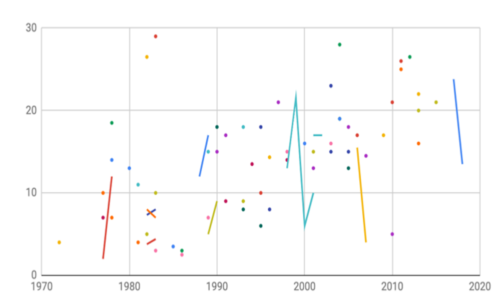

Figure 6.19: Average widget count per controller by unique platform over time.

Controllers use widgets to communicate and *translate* physical inputs into in-game activity and, at times, in-game activity to physical outputs. Every widget on a controller either translates specific inputs and outputs in or out of games or mediates some gameplay related function. In this section, I use a few notable widgets to highlight the role of controllers as go-betweens and the periludic interface that *directs* gameplay most immediately and tangibly. I use my data on the widgets that afford directional and motion control and haptic feedback to illustrate how controllers translate and mediate intent and activity in or out of games.

6.2.1. Navigation and View: Directional widgets

No widget *directs* gameplay in a more literal or immediate sense than the directional widgets primarily used for navigation and movement. Sticks and d-pads translate player intent into character and camera movement in-game and allow players to navigate the variety of digital interfaces and menus that support gameplay. Changes in directional widgets reflect a general evolution of gaming platforms *and* game mechanics, and an understanding of how games may be played.

Players use directional widgets to navigate and view gameplay. Instead of pulling open a place in a text with a bookmark, turning a page, or following lines of text with a yad, players use controllers and their directional widgets to move about and turn around game worlds.

D-pads and sticks (Figure 6.1, Figure 6.2, and Figure 6.3) were the only directional widgets I observed on more than five controllers in my overall sample and on more than two controllers since 1983. Figure 6.20 charts the number of controllers with no directional widgets, at least one d-pad, at least one stick, a combination of at least one d-pad *and* stick, and other directional widgets as a percentage of controllers for each year of my sample. In this chart, can see how the video game industry began with a variety of approaches to directional input before mostly settling on the combination of d-pads and sticks that has dominated controller design for the last twenty years. Figure 6.21 charts the average d-pads and sticks per controller over time in my overall sample. In this chart, we can see how controllers have mostly come to settle on a two-stick, one d-pad average.

In fact, the default controller for nine of the ten stationary home-gaming consoles in my sample released since 2000 had a 2:1 stick to d-pad ratio[5]. The dips in averages since 2000 account for handheld platforms trailing stationary consoles in adopting the 2:1 ratio, a spike of highly specialized game-specific controllers in the mid-late 2000s, and a unique default controller from 2017 that I will discuss in greater detail below because it has multiple default configurations.

[5] I use "default" in this chapter to refer to the controller sold with the platform upon initial release.

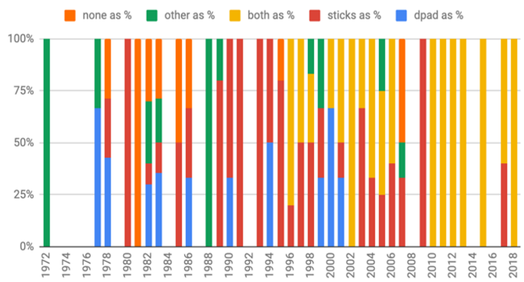

Figure 6.20: Controllers with only d-pads, only sticks, both d-pad and sticks, other directional widgets, or no directional widgets as a % of controllers over time

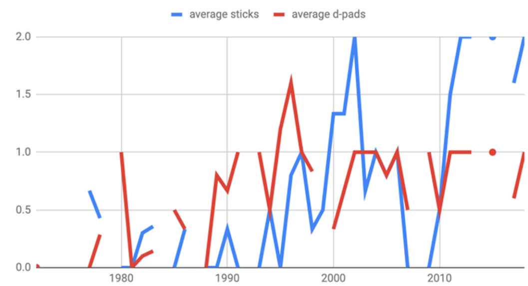

Figure 6.21: Average sticks and average d-pads per controller over time

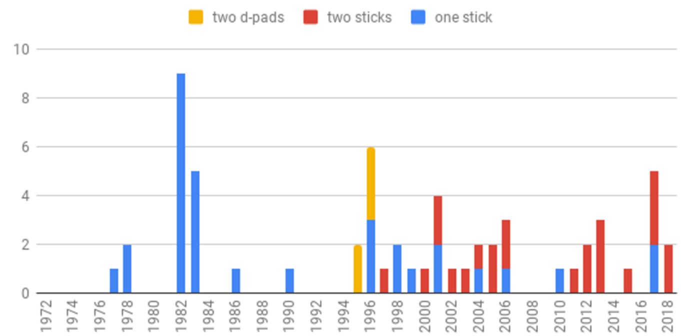

Figure 6.22: Total controllers with one stick, two sticks, and two d-pads over time

Figure 6.22 shows the number of controllers with a single stick, two sticks, and two d-pads in my sample over time. I left controllers with a single d-pad out of this chart to highlight the inflection point between 1995 and 1997. D-pads appear relatively consistently before and after this point and, as Figure 6.20 and Figure 6.21 show, overlap with stick presence whereas neither of the two controllers with two d-pads had sticks. By looking at Figure 6.20 and Figure 6.22, we can see that the first controller with two d-pads (and two directional widgets for that matter) was in 1995, the first controller with a stick and a d-pad was in 1996, and the first controller with two sticks—and a single d-pad—was in 1997. Figure 6.20, Figure 6.21, and Figure 6.22 illustrate the beginning of multi-directional widget controllers and the origin of the increasingly pervasive and default adoption of the 2:1 stick to d-pad ratio described in the previous paragraph.

The reduction in the variety of directional widgets over time and the standardization of the 2:1 stick to d-pad configuration showcases an initial expression of multiple perspectives for how gameplay should be directed followed by eventual consensus. Controller designs posited certain methods of interface while constraining game design, game design pushed against those constraints, and over time controller and game design practices were redefined and evolved in synthesis. This evolution and standardization of the 2:1 stick to d-pad configuration is an example of how controllers reside in a dialectic of interface, gameplay, platforms, and game design over time.

The first controller, and *default* controller, with 2 directional widgets in my sample was the Nintendo Virtual Boy controller released in 1995, with its two d-pads (Figure 6.23). Home gaming platforms before the Virtual boy were technically capable of accepting inputs from multiple directional widgets. They just had not put two directional widgets on the same controller.

For example, though not in my sample, arcade game Robotron: 2084, released in 1982, did use two sticks for its default single-player mode (Figure 6.24). Although Robotron: 2084 was eventually released for home-gaming on the Atari 7800, players needed to use two controllers if they wished to experience gameplay as originally designed for the arcade machine.

The default Nintendo 64 (N64) controller, released in 1996, was the first controller with a mixture of at least one stick and at least one d-pad (Figure 6.25). In addition, this N64 controller was the first to add a third directional widget: the yellow "C" buttons, each labeled with an arrow and positioned symmetrically to the d-pad on the controller in a similar configuration to the two d-pads on the Virtual Boy controller.

Although not the default controller for the PlayStation (Figure 6.26), the DualShock controller that released in 1997 (Figure 6.27)—three years after the release of the platform and less than a year after the release of the N64—was the first controller to feature the 2:1 stick to d-pad ratio. The DualShock's success led to a functionally identical default controller for the PlayStation 2 (PS2) platform three years later in the form of the DualShock 2 (Figure 6.28).

Figure 6.23: Photo of Nintendo Virtual Boy default controller, 1995, top

Figure 6.24: Robotron: 2084 Arcade controls, 1982. Photo by Piotrus (2009)

Figure 6.25: Photo of Nintendo 64 default controller, 1996, top

Figure 6.26: Photo of Sony Playstation default controller, 1994, top

Figure 6.27: Sony Playstation DualShock controller, 1997, top

Figure 6.28: Sony Playstation 2 default controller and DualShock 2 controller, 2000, top

The introduction and influence of these controllers connects to innovations in the practice of game design that go beyond an analysis of a single generation of home-gaming consoles or the rivalry between Nintendo and Sony (Holland 2015; Hurley 2019). The mid 1990s saw the proliferation of 3D movement in games. 3D graphics had appeared in games in various forms since at least 1982 and the Vectrix platform. Gameplay movement along 3 axes, however, had not. The very first game with true 3D gameplay is debatable. One of the strongest early examples of a fully realized 3D game space and movement along three axes released for a home-gaming platform is Mario 64 (Figure 6.29), a flagship N64 game released alongside the platform in 1996.

Movement in three dimensions provided new challenges for game designers and platform manufacturers more familiar with two-dimensional digital game worlds. Nintendo had the benefit of being a game publisher and a platform manufacturer. Their experience designing and manufacturing the Virtual Boy with its two d-pads preceded the development of the N64 controller. Although the Virtual Boy did not have any examples as fully realized as Mario 64, some games for the platform supported rudimentary forms of three-dimensional movement. The Virtual Boy's controller's second d-pad was necessary to allow movement or rotation along a third axis because one directional widget can only interact with two axes at a time.

Character movement continues to be a key piece of why directional widgets are important and the influence of the N64 and its controller did not end with Mario 64. Goldeneye, released on the N64 in 1997 (Figure 6.30), is an early and significant example of a console-based first-person shooting game that utilized a two-directional widget control scheme. This game used the N64 controller's C directional buttons as a second directional widget. Goldeneye used the stick for moving forward and back and turning the camera left or right, and the C directional buttons for left and right movement and turning the camera up and down.

Figure 6.29: Photo of Nintendo's Mario 64, 1997, photo by author

Figure 6.30: Photo of Rare's Goldeneye 64, 1997, photo by author

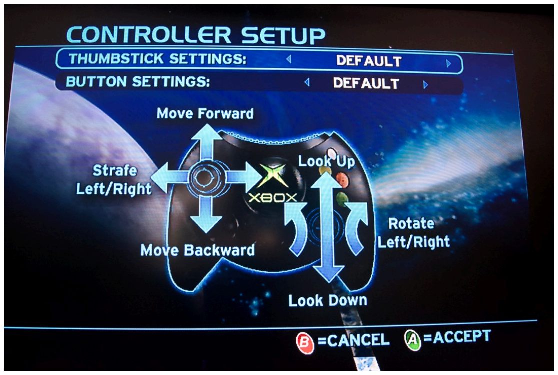

Figure 6.31: Photo of Default control scheme from Bungie's Halo: Combat Evolved, 2001, photo by author

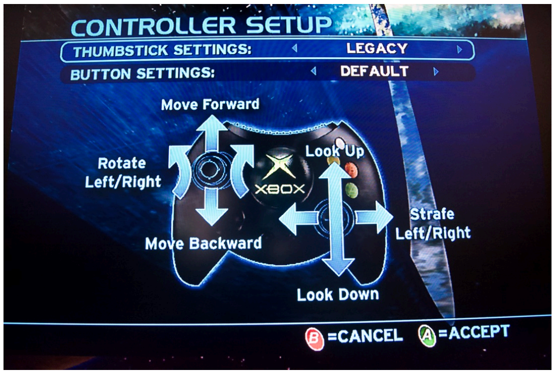

Figure 6.32: Photo of Legacy control scheme from Bungie's Halo: Combat Evolved, 2001, photo by author

Today, *every* console-based first-person shooting game relies on a two directional widget control scheme to control movement, pitch, and yaw. These games utilize what they *all* label the "default" control scheme (Figure 6.31), which opts to assign forward, backward, left, and right movement to the left stick, and the rotation of view along the x or y axis to the right stick. This control scheme was popularized on stationary home-gaming platforms by games such as Halo: Combat Evolved, released in 2001 for the Microsoft Xbox[6]. However, Halo and many following games also had a control scheme called "Legacy" that paid homage to Goldeneye, and the N64 controller, by replicating its control scheme using two sticks instead of a stick and the C directional buttons (Figure 6.32). The *legacy* of Goldeneye and the N64 live beyond their generation, platform, and publisher in acknowledgements by later games of their influence on how players and designers alike might look about in first-person perspective games.

For games that utilize a third-person perspective, camera movement is as important as character movement. Before controllers had a second directional widget, digital games mostly relied on one of two strategies for controlling perspective. The first strategy was a static camera perspective that might shift as characters moved from room to room, area to area, or when the game progressed in some way. The second strategy was a camera perspective constrained to the player character that followed them from a set distance or perspective, keeping them always in view, often in the center of the screen. Although these camera management strategies are still in use, additional directional widgets opened up new possibilities.

In addition to a strong early example of 3D movement, Mario 64 is an early and significant example of a game that allows players manual control of a third person camera in a 3D world. This feature was controlled using the set of C directional buttons. Until games such as Mario 64, the camera *only* moved according to the will of publishers, never players.

Many contemporary games continue to mimic Mario 64 by mapping movement to the left stick and camera movement to a second widget, generally a right stick. This control scheme resembles the default scheme described above in first person shooters, with movement on the left and view rotation on the right, and often carries the same default label in newer games.

The addition of a second and third directional widget to periludic controllers *literally* opened up new directions for gameplay and translating active intent into gameplay activity. To echo Marcotte (2018), the availability and use of additional directional controls reconfigured how players and developers alike could express themselves in movement and perspective in-game, creating new constraints on gameplay and the sorts of games that *can* be designed.

Periludically, the affordances of these directional widgets determine the directions and dimensions along which we may participate in gameplay. The decrease in variety and the

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[6] Although The first first-person shooting game to use two sticks and this scheme was Alien: Resurrection on the PlayStation a year prior to Halo, it was not as widely successful, and critics at the time panned the control scheme (CITE).

standardization of the 2:1 sticks to d-pad configuration we can see in my data coincides with a shift toward 3D gameplay and a default assumption of how movement and viewpoint *should* manifest in 3D games. All contemporary platforms have two sticks. By *default,* movement control is assigned to the left, camera to the right. Meanwhile, d-pads have shifted over time from a popular widget for controlling character movement to commonly fulfilling more supporting roles such as giving access to simplified menus accessible during gameplay.

6.2.2. Embodied translations: Motion control and haptic feedback

Motion control and haptic feedback attempt to directly translate activity to or from bodies and digital game worlds. Motion control translates bodily motion *into* in-game activity. Haptic feedback translates in-game activity *out* to bodily feeling.

Motion Control

Motion control encourages players to participate in a facsimile of in-game activities. Technically, all controller inputs translate *some* motion into gameplay. However, while claims of immersion are beyond the scope of this dissertation, comparing manipulating thumb-sticks or pressing buttons to standing on a skateboard controller to maneuver an in-game skater-character does at least highlight how these controllers afford more embodied interactions.

Players using controllers like the skateboard controller above in Figure 6.4, or the sword controller below in Figure 6.33 are asked to participate in activities that resemble those of their in-game characters. Players participate in "behavioral mimicry" of real-world activities through their interaction with these interfaces in a way more common controllers do not allow (Bizzocchi, Ben Lin, and Tanenbaum 2011). Moreover, this mimicry can increase what Tanenbaum and Bizzochi describe as "ludic efficiency," or "the extent to which an interface device eases or hinders the player's attempt to perform any given operation within the game" (2009, 128). By mimicking familiar real-world activities as a function of the interface to produce similar in-game activities, these interfaces increase what Bolter and Grusin describe as "transparent immediacy," an experience that appears unmediated (Bolter and Grusin 2000; T. J. Tanenbaum and Bizzocchi 2009). Bizzochi, Lin, and Tanenbaum further argue leveraging ludically efficient behavioral mimicry creates opportunities for different kinds of gameplay and game stories (2011).

Figure 6.33: Capcom and Hori's Katana controller for the PS2, 2004, left

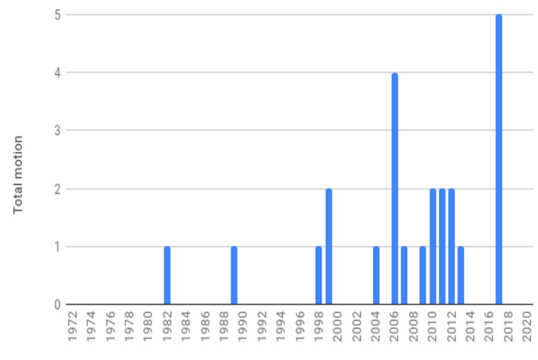

Figure 6.34: Total controllers with motion control by year

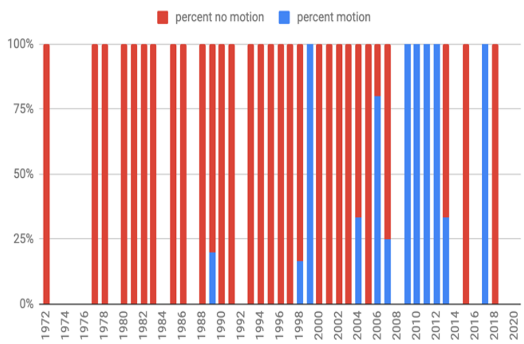

Figure 6.35: Percent of controllers with or without motion control by year

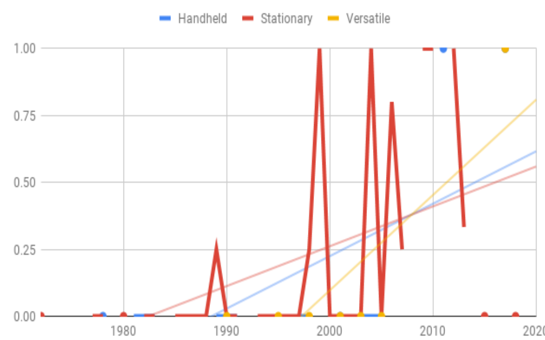

Figure 6.36: Average occurance of motion control per controller by subcategory over time

Figure 6.34 charts the number of controllers in my sample with motion control over time. Figure 6.35 charts the percentage of controllers with and without motion control, by year. Figure 6.36 charts the average presence of motion control per controller, by sub-category over time. Together, these charts show that motion control is found primarily in stationary platforms. Although motion control first appeared early in my sample, platforms have been slow to adopt it by default. Despite a rapid increase of motion control enabled controllers beginning in 2004, only four of the ten default controllers for stationary consoles released since 2000 were motion control enabled.

Based on my data, I cannot say whether the lack of pervasive implementation of motion control comes from a lack of more effective technology or because publishers have not figured out the best ways to integrate motion control into games, or because of some other factor. However, The relative newness of motion control as a means of interaction likely challenges game designers to fit the expanded range of potential inputs into familiar models of design.

The first motion control enabled controller in my data was the Expansion Module #2 controller for the ColecoVision, released in 1982 (Figure 6.37). This steering wheel and pedal controller would barely count as motion control by today's standards and lacked the modern use of accelerometers or gyros. The Expansion Module #2 simply used a dial-like widget with a superficial plastic steering wheel to simulate an actual driving wheel, and a gas pedal that was effectively a button with an extra-large plastic covering that players pressed with their foot. The controller was released in conjunction with the racing game Turbo. While the game could be played with a default controller, the Expansion Module #2 was intended to improve the gameplay experience and encouraged players to embody the in-game activity of driving.

Figure 6.37: Photo of ColecoVision Expansion Module #2 controller, 1982

Controllers with motion control were released only sporadically for the 20 years following the Expansion Module #2, and might only function correctly with a single game or a small collection of games. The mid 2000s saw an increase in experimentation and highly specialized motion control enabled controllers such as Guitars (e.g., Fig. EE) and actual motion capture cameras (e.g., Fig. FF). The first motion-enabled default console controller was the Sony Playstation 3's (PS3's) sixaxis controller (Fig. GG), followed less than a week later by the release of the Nintendo Wii's Wiimote controller (Fig. HH). The inclusion of motion control functions in these controllers by default meant publishers could develop motion control enabled games for these platforms without having to invest in their own specialized controllers. The Wii especially was marketed based on its motion control. Default access to the affordances of motion control gave players and publishers alike a wider range of means of interacting with gameplay.

Figure 6.38: Photo of Activision's Guitar Controller for Xbox 360, 2007, front

Figure 6.39: Microsoft's Kinnect controller for Xbox 360, 2010, back

Figure 6.40: Sony's Playstation 3 Sixaxis controller and default controller for the PS3, 2006, top

Figure 6.41: Nintendo's Wiimote controller and default controller for the Wii, 2006, top

Motion control reconfigures how player bodies may be used to interact with digital gameplay. Periludically, motion control augmented controllers permit new dimensions of player movement to direct gameplay. However, as players are potentially asked to embody what may occur in game to some level, motion control creates new constraints on the sorts of players who may be invited to participate based on varying physiological lacks or excesses that make embodying gameplay activities challenging.

Haptic feedback

Haptic feedback refers to any form of output players may physically feel in response to in-game events. The most common form of haptic feedback, *rumble,* uses intentionally off-balance weights attached to motors that cause controllers to vibrate. Rumble is the only form of haptic feedback I observed in my sample.

Haptic feedback encourages players to feel some facsimile of in-game activity. Haptic feedback translates events in games into physical stimuli. All haptic feedback in my sample took the form of rumble-enabled controllers that vibrate in response to in-game activity. Although alternatives exist[7], haptic feedback has ethical and legal constraints on potential harm to players when more closely translating potentially dangerous gameplay activities into physical sensations.

Figure 6.42 charts the number of controllers with haptic feedback over time. Figure 6.43 charts the percentage of controllers with and without haptic feedback, by year. Figure 6.44 charts the average presence of haptic feedback per controller, by subcategory over time. As with motion control, haptic feedback is primarily found with stationary platforms. Haptic feedback was introduced much later in my sample than motion control yet today is much more widely adopted on average. Haptic feedback is a feature of nearly all later controllers in my sample and nine of the ten default controllers for stationary consoles released since 2000 included haptic feedback.

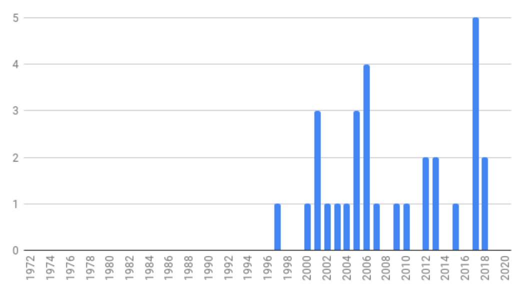

Figure 6.42: Total controllers with haptic feedback over time

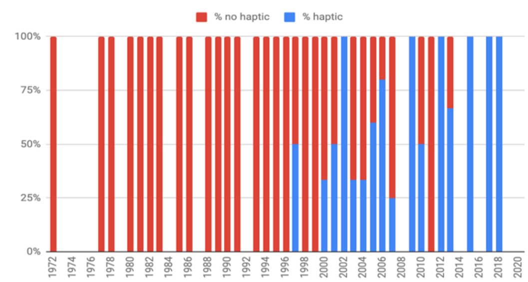

Figure 6.43: Percent of controllers with or without haptic feedback by year

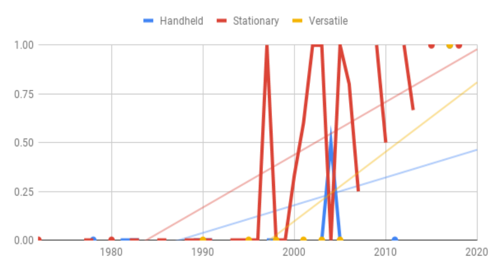

Figure 6.44: Average occurrence of haptic feedback per controller by subcategory over time

[7] "Force-feedback" is another form of haptics that can appear in high-end joysticks and steering wheel controllers and some manufacturers have attempted to make more extreme haptic feedback products. For example, Nuby's "reality vest" repeats the rumble signal sent by the N64 controller to a large series of rumble packs set around the player's torso (Blcklblskt 2011). A more extreme example is the "Blood Sport" system, an eventually canceled product that aimed to draw blood from players when they took damage in game (Allen 2014; Bruk 2014; Kooser 2014). However, none of these extreme examples were in my sample, and they tend to become niche items, as with the reality vest, or are potentially problematic, as with Blood Sport.

The earliest controller in my sample, and first controller, with built in rumble was the Sony PlayStation's DualShock controller, released in 1997 (Figure 6.2 or Figure 6.27). However, the DualShock is not technically the first controller to *afford* rumble. Seven months prior, Nintendo released the Rumble Pak, an augmentation for the default N64 controller that could be inserted into the memory+ port on the underside of the controller to add rumble capabilities. The first game to utilize rumble was StarFox 64 for the N64 which was sold with the augmentation. The N64's rumble capabilities are not captured in my quantitative data because I did not include controller augmentations. The PS2's DualShock 2 controller, released in 2000 (Figure 6.28), was the first default controller for a home-gaming console with rumble. As said above, since the PS2 only one stationary platform—the Ouya, an independent, crowd-funded and only mildly successful platform—has *not* had rumble as a default feature of its controller, emphasizing its adoption and pervasive place in the activity of gaming.

Haptic feedback, and rumble specifically, translates sometimes dramatic, sometimes complex facets of gameplay into a vibration that players feel from their controller. The first use of rumble was to signify that a player's character had taken damage. Although this usage is still very common, rumble is used to notify players of other information as well. Games often use rumble to represent some sort of special *sense* that indicates something notable is nearby or occurring. In both of these usage examples, rumble communicates some in-game condition of either the player's character or their place in a game world to the player through actual feeling in order to direct their potential in-game actions.

Haptics reconfigure which senses may be used to communicate gameplay outputs to players. Prior to the introduction of rumble as a facet of controllers, games were only able to communicate information to players through visual and audio output. Rumble features leverage the assumption controllers are already in contact with players to introduce a new line of communication felt directly by players' bodies. Periludically, haptics direct gameplay by providing an additional medium of feedback and information exchange that alerts players to changes in-game that designers prioritized mapping to physical outputs.

6.3. Connections, integrations, and tethering

Some of the ways controllers function periludically to direct and influence gameplay are less immediate than the moment to moment inputs players provide through directional widgets or motion control or the outputs they receive through haptic feedback. In this section, I describe how some of the more logistical components of controllers can have an important impact on gameplay.

I highlight how ports can augment the affordances of controllers and how even seemingly passive elements such as controller wires can impact how games may be played.

6.3.1. Ports

Port describes various apertures found on controllers or gaming platforms. Ports are receptacles for external connections or augmentations. For example, many contemporary wireless controllers have internal rechargeable batteries that require a port for a charging cable that connects the controller to the platform, temporarily it wired for recharging purposes (e.g., Figure 6.45). Some ports function for information input/output, such as common 2.5mm or 3.5mm headphone jacks (also called a TRS port) or one of the many proprietary audio/data ports used to connect headphones or headset microphones (e.g., Figure 6.46).

Because they are at once controller and platform, handheld or versatile devices often have a wider variety of ports than controllers for stationary platforms. For example, a port for supplying power, a port to link to another device for multiplayer purposes, a 3.5mm audio/data port, and a port to receive the actual game cartridge are all visible on the handheld device in Figure 6.47. However, this is only one face of the device and handheld and versatile platforms may have additional ports. One handheld platform in my sample had eight ports—though two were duplicates. Figure 6.48 charts the total average ports per controller in my sample over time. As this chart visualizes, there is a trend toward more average ports per controller over time *and* with them, more possible connections.

In this sub-section, I highlight two specific ports: memory+ ports and multiplayer/link ports. These two ports had clearer trends in my data than many others and I describe how they may be linked to notable shifts in game design, or greater affordances that have influenced game software publishing.

Figure 6.45: Photo of Playstation 3 "sixaxis" controller with charging port visible in the center

Figure 6.46: Photo of Xbox 360 controller with proprietary audio/data port visible in the center

Figure 6.47: Photo of Atari Lynx II with a variety of ports visible

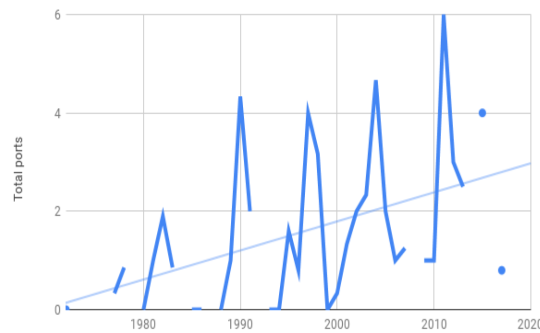

Figure 6.48: Average ports per controller over time

Memory+ ports

Memory cards are a common storage device used to save game data. Although the ports I describe as *memory+* are often explicitly for memory cards, they are capable of hosting a variety of other accessories that can augment controllers with new affordances and functions beyond their stated or explicitly labeled purposes.

For example, when discussing haptic feedback above, I described how rumble could be added to the N64 controller by inserting an augmentation into the slot on the underside of the controller (Figure 6.49). The memory+ port on the N64 supported other augmentations as well such as memory cards themselves and the Transfer Pak (Figure 6.50), which allowed players to insert select Gameboy games into their controller to transfer data to or from select N64 games.

Figure 6.49: Photo of Memory+ port at top middle of the bottom of this Nintendo 64 controller

Figure 6.50: Image of Nintendo 64 Transfer Pak. Photo by Evan-Amos (2016)

Figure 6.51: Photo of memory+ ports in the center of the front of this Sega Dreamcast default controller

Figure 6.52: Photo of Sega Dreamcast microphone adaptor, or audio/data port adapter that plugs into memory+ port in Figure 6.51

As another example, the Sega Dreamcast used the memory+ slots on its controllers for a similar variety of purposes beyond simply saving games (Figure 6.51). Like the N64, the Dreamcast added rumble through the addition of an accessory inserted into a memory+ port. The Dreamcast even used its memory+ port to add additional ports, such as for audio/data (Figure 6.52). Finally, I discussed the uniqueness of the VMU above (Figure 6.14) and the symbiotic relationship it had with Dreamcast games. The Dreamcast used controller memory+ slots to integrate an entire additional gaming platform into its standard gameplay.

UU charts the number of controllers with memory+ ports by subcategory over time. Fig. VV charts the percentage of *stationary* controllers with or without memory+ ports, by year and Fig. WW charts the percentage of *handheld* devices with or without memory+ ports. Only one versatile device had a memory+ port.

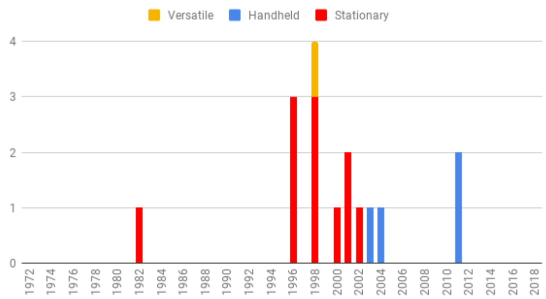

Figure 6.53: Total controller with memory+ ports by subcategory over time

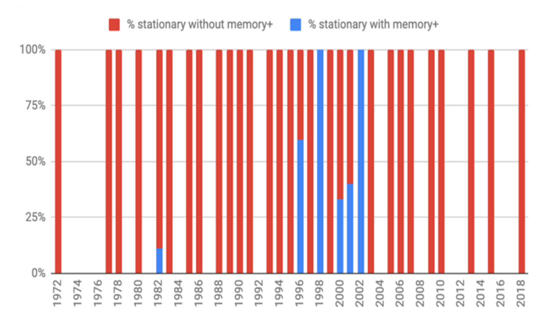

Figure 6.54: Percent of controllers for stationary platforms with or without memory+ ports by year

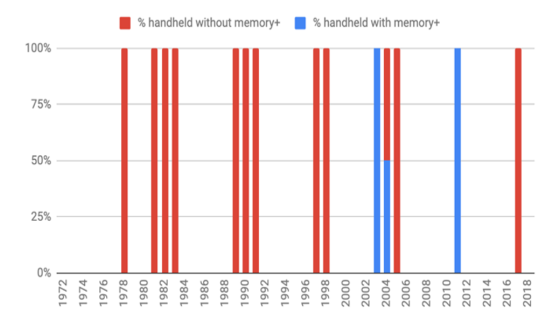

Figure 6.55: Percent of handheld controllers with or without memory+ ports by year

Besides an early outlier and a later handheld holdout, I primarily observed memory+ ports attached to controllers during a brief eight-year period between 1996 and 2004, or roughly two stationary home-gaming console generations. Although memory cards and memory+ ports were present in some form for the majority of my sample, outside this period they were attached only to the platform hardware itself rather than controllers. This timeframe represents a period of experimentation and some important shifts in the gaming industry: The end of cartridge-based stationary home-gaming platforms, the last platform ever released by Sega, the end of the Nintendo-Sega rivalry as a result, the first platform released by Microsoft, and the beginning of the Microsoft-Sony rivalry all occurred during this time (Gamble 2008; Harris 2014; Holland 2015).

Memory+ ports allowed players to reconfigure controllers, and by extension gameplay, by permitting the real-time addition or removal of controller augmentations. The ability to add new features and affordances—and inputs and outputs—to controllers changed in real time their means of interaction and communication. As saving moved to internal hard drives and the cloud and features such as rumble or audio/data ports became default components of more contemporary controllers, however, these ports became less common. Reconfigurable controllers and the bevy of experimental augmentations were replaced by standards and constraints based on more widely used augmentations.

Periludically, memory+ ports on controllers made it difficult to rigidly define what sorts of gameplay inputs and outputs were possible. Memory+ ports afforded controller augmentation beyond default configurations, and so too the augmentation of gameplay. As the widgets in the previous section expanded dimensions of interaction, memory+ ports opened up new ways of *altering* input, output, and interaction. For example, because the N64 controller only had one memory+ port, players had to choose between accessories at any given moment. Accessing haptic feedback or trading in-game items with a Gameboy game, for example, became a choice about controller configuration, rather than strictly in-game mechanics or game software settings. No amount of desire or skill would permit players to *feel* gameplay activity or commence these in-game trades without these non-default augmentations.

Multiplayer/link cable ports

Multiplayer/link cables connect multiple devices together for shared or competitive gameplay. The ports that accept these cables only appeared on handheld and versatile devices in my sample. Although stationary platforms may have similar ports, they appeared only on the platform hardware itself rather than any controllers I observed.

Multiplayer/link ports primarily supported two functions: Connecting devices in a multiplayer scenario and data transfer. However, like the memory+ ports, these connections could reconfigure the devices they supported and augment, limit, or transform gameplay choices and mechanics in sometimes dramatic ways.

The Nintendo Gameboy was the first device in my sample to have a multiplayer/link port (Figure 6.56). Tetris for the Gameboy was the first game to utilize this port's functionality to support its competitive multiplayer mode in an early form of networked play. Although a handful of games for more computer-based platforms such as the Commodore series of platforms and the Atari ST had supported networked play using modems, the Gameboy was the first home-gaming console to support direct device-to-device multiplayer without external networking requirements.

Many games that leveraged a multiplayer/link port initially followed the example of Tetris and supported competitive or cooperative play between two players, two copies of a game, and two handheld devices. Alternatively, link-cables were used to support various trading mechanics between players, games, and devices in games such as the Pokémon series.

Figure 6.56: Photo of two Nintendo Game Boys linked together. Photo by KoS (2007)

The multiplayer/link port does not augment potential player inputs and outputs in quite the same way I describe the memory+ port. However, the connections and communication this port supported still augmented gameplay and altered the possible gameplay outcomes of controller inputs. Multiplayer gameplay was dictated as much by the use of this port as the content of any game software or any in-game mechanics.

Handheld and versatile devices inherently blur the line between a periludic and platform analysis. That I observed multiplayer/link cables only on handheld and versatile devices does not help. However, the technical function of early ports lends some useful perspective. The majority of early multiplayer/link ports were serial ports, rather than network ports in the way we may think of them in a more contemporary setting. That is, these ports functioned similarly to early controller ports rather than network ports. Linking two devices using these ports did not create a network between two devices so much as temporarily *combine* them into one device where each player could *control* elements of temporarily entwined games. That is, each player's controller/platform becomes a controller for both players' games.

The GameCube – Gameboy advance link cable (Figure 6.57) that connected to the multiplayer/link port on the Gameboy advance and the controller port of a GameCube allowed players to link the two separate platforms. The majority of games that utilized this cable did so to support some sort of trading or cross-platform content exchange of some kind, akin to the transfer pak described above for N64. A few games such as The Legend of Zelda: Wind Waker, Medal of Honor: Rising Sun, or NASCAR Thunder 2003 enabled various secondary gameplay functions to display or operate on a Gameboy plugged into a second controller slot on the GameCube, while players continued to play in a sort of augmented form of otherwise default gameplay.

Figure 6.57: photo of Gamecube - Game Boy Advance link cable. Photo by Evan-Amos (2012)

Figure 6.58: Image of setup for playing Final Fantasy: Crystal Chronicles in multiplayer mode. Photographer unknown.

Games such as Final Fantasy: Crystal Chronicles (FFCC) and The Legend of Zelda: The Four Swords Adventure (LoZ:FSA), on the other hand, leveraged this cable and port on the Gameboy Advance to fundamentally alter gameplay. The cooperative multiplayer modes in these games were *only* playable when *replacing* the default GameCube controller with up to four Gameboy advance platforms (Figure 6.58). Although the single player and multiplayer modes for these games covered essentially the same narrative, the game mechanics changed dramatically between modes. These games shifted integral information to, and added game mechanics on, the second screen the Gameboy-as-controller provided and relied on the multiplayer/link port's ability to temporarily reconfigure the Gameboy advance platform into a controller for the GameCube.

Figure 6.59 and Figure 6.60 chart the percent of handheld and versatile devices with or without multiplayer/link ports by year, respectively. Multiplayer/link ports appeared for the first time in 1989 and were immediately pervasive in handheld and versatile devices before they seem to disappear by 2005. Because handheld and versatile devices are at once platform and controller, all controllers are default controllers for these platforms.

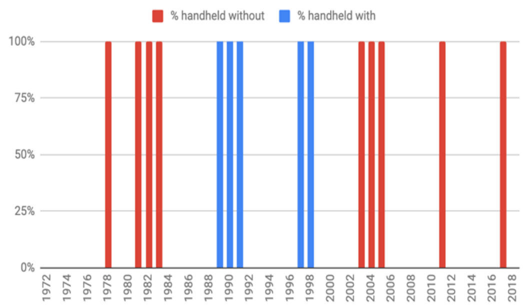

Figure 6.59: Percent of handheld platforms with multiplayer/link ports by year

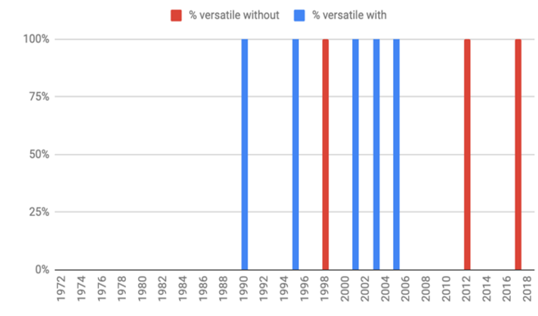

Figure 6.60: Percent of versatile platforms with multiplayer/link ports by year

As with memory+ ports, multiplayer/link ports worked to expand the gameplay possibilities of the devices they supported, despite their relatively short life-span. Ultimately, however, their primary use for inter-device multiplayer and data exchange was supplanted by wireless networking and mobile technologies adopted by later platforms and game publishers. Clever uses of these ports to dramatically reconfigure gameplay such as FFCC or LoZ:FSA were ultimately few in number.

Perilidically, multiplayer/link ports destabilized which games controllers could direct or to which platform they belonged. Multiplayer/link ports reconfigured handheld and versatile devices to influence gameplay beyond a single device, or platform. In a similar effect to online, networked game spaces that are more common now, these ports afforded new ways of communication and interaction between players, games, and platforms. As with examples such as FFCC and LoZ:FSA, this port had the power to transform devices from platforms to interfaces that controlled other platforms and back again, inherently troubling previous platform studies models or assemblages (e.g., Montfort and Bogost 2009; Boellstorff and Soderman 2017). Although the multiplayer/link cable has been replaced by wireless technologies, its ability to reconfigure the role of the devices it supported broke standard assumptions about what counted as a controller, and which controllers must inherently direct which games. And unfortunately, network connections do not currently process gameplay inputs between devices and platforms the same way these ports did, and so unique gameplay examples such as FFCC or LOZ:FSA *cannot* be produced in the same way in the contemporary gaming space.

6.3.2. Wired and wireless

Wires and wireless technology are common mediums for transferring electronic information. However, For the purposes of this sub-section, I am only concerned with wired or wireless connections used to transfer information between controllers and gaming platforms. That is, I only address the connections through which the inputs and outputs of widgets travel. I do not classify wires themselves as widgets because they do not directly afford inputs, outputs, or augmentations.

Wires tether controllers and players to the platforms to which they are attached. Controller wires become leashes that constrain player distance and movement in relation to a platform or location. Although a simple communication medium, wires or their absence have an important influence on where players may participate in gaming and the ability of every controller widget or affordance to translate their inputs to gameplay.

The presence or lack of wireless capabilities supports or hinders other features of controllers, such as motion control. While I noted some direct challenges to the adoption of motion control above, wireless capabilities are an additional factor for more effective motion control. Although earlier examples exist, motion control has a more consistent presence beginning in 2004 (most easily seen in Figure 6.35). Similarly, while there are earlier wireless controllers, they begin their more consistent presence beginning in 2004 (Figure 6.61 and Figure 6.62). I recognize that these technologies having a similar beginning to more wide-spread adoption is a correlation and does not alone suggest that one caused the other to succeed. However, wire lengths create a hard constraint on ranges of motion. Wireless motion control enabled controllers such as the skateboard and sword pictured above (Figure 6.4 and Figure 6.33, respectively) would have more operational and safety concerns if every lean, kick, or swing threatened to entangle players, friends, or furniture in wires.

Though less of an issue with contemporary wireless technology, the signal latency or input lag that some early wireless controllers suffered from is an ongoing concern for some players (Smith 2020). For competitive or highly precise games and game modes, delays between player inputs on a controller and gameplay outcomes on a screen could have an important influence on how gameplay and player experience manifested. Communication latency fundamentally alters the timing of gameplay and reliability of all controller inputs.

Figure 6.61 charts the number of wired and wireless stationary controllers in my sample over time. Figure 6.62 charts the percentage of wired and wireless stationary controllers by year. These two charts illustrate the decline of wired controllers and the shift to wireless controllers over the last 20 years of my sample. Handheld and versatile devices that are at once controller and platform are not represented in these charts

Seven of the ten default controllers for stationary consoles released since 2000 were wireless. The seven default controllers for stationary consoles released since 2005 were all wireless. Although the two 2018 controllers in my sample were wired, they were explicitly meant to replicate the older GameCube experiences on the newer Switch platform (Newell and Duwe 2020; Vargus and Knapp 2020).

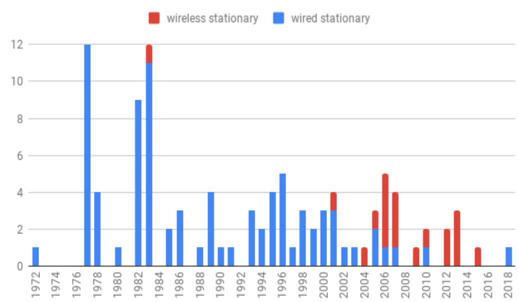

Figure 6.61: Total wired and wireless controllers for stationary platforms over time

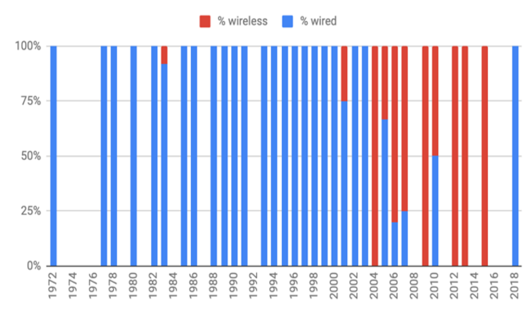

Figure 6.62: Percent of wired and wireless controllers for stationary platforms by year

Figure 6.63: Photo of Atari 2600 "remote control" wireless controller, 1983, top

Figure 6.64: Photo of Nintendo WaveBird Controller for the GameCube, 2001, top

Other than a notable outlier for the Atari 2600 released in 1983 (Figure 6.63), wireless controllers only began showing up regularly in the latter years of my sample. I am aware of a few other notable examples of wireless controllers or adapters for controllers that were released between 1983 and 2001 that were not captured in my sample. However, many of these examples are quite rare and/or did not have large production runs or wide distribution. The first functional, contemporary, well-received, and widely available wireless controller was the Nintendo WaveBird released in 2001 for the Nintendo GameCube (Figure 6.64).

Players of early stationary platforms had to sit close by or on the floor to play their games. Fig. RR is a screenshot of the top ten results of a google image search conducted in an incognito chrome window at time of writing for "people playing Atari." All pictured players are sitting quite close to the television and many are sitting on the floor. Fig. SS is an advertisement for an early home-gaming console that similarly portrays players very close to the screen. The average length of controller wires since 2000 in my sample is 228 cm, or wireless. Prior to 2000, the average is 175 cm. Even earlier, the average length prior to 1990 is 169cm, with several not much longer than a meter. Although I cannot say what precisely motivated manufacturers to increase cord lengths based on my data, I can observe that players were able to sit increasingly far away from screens over time. I am able to say that players were able to dictate their positioning for gameplay more freely over time

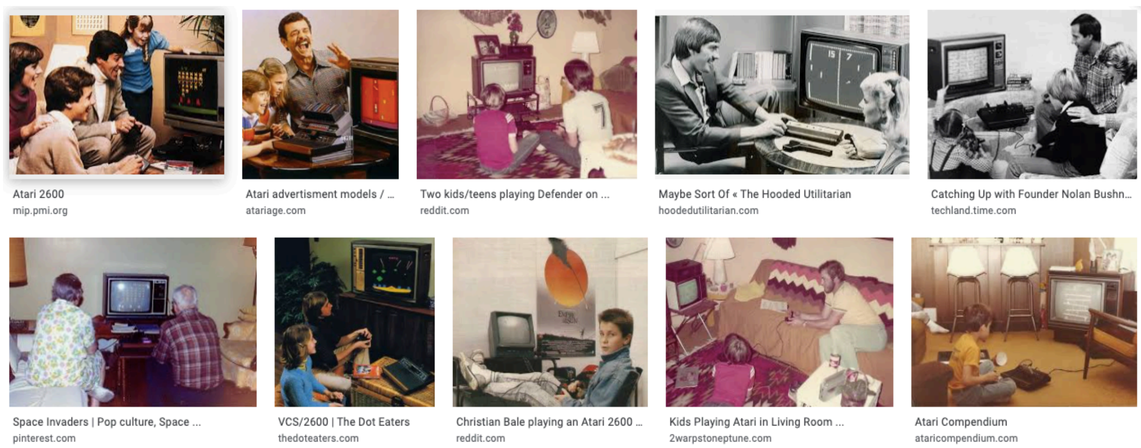

Figure 6.65: Screen capture of a google image search conducted in an incognito chrome window for "people playing Atari" conducted August 2020

Players of early stationary platforms had to sit close by or on the floor to play their games. Figure 6.65 is a screenshot of the top ten results of a google image search conducted in an incognito chrome window at time of writing for "people playing Atari." All pictured players are sitting quite close to the television and many are sitting on the floor. The average length of controller wires since 2000 in my sample is 228 cm, with many wireless controllers. Prior to 2000, the average is 175 cm, with only one wireless controller. Even earlier, the average length prior to 1990 is 169cm, with several not much longer than a meter. Although I cannot say what precisely motivated manufacturers to increase cord lengths based on my data, I can observe that players were able to sit increasingly far away from screens over time. I am able to say that players were able to dictate their positioning for gameplay more freely over time.

The length of wires for early platforms meant even a couch in a relatively small room might be too far away to sit on while participating in gameplay. With longer cords and wireless technology players were freer to situate themselves how they wished during gameplay. With wireless controllers, players were less tethered to specific physical constraints of distance and position in relation to platforms. In the two Nintendo WaveBird advertisements below in Fig. and Fig. announcing its launch, Nintendo highlights the proposed diminishing constraints on where and how players may play their games.

Figure 6.66: Magazin advertisement for Nintendo WaveBird. Published in several magazines. Nintendo, exact date unknown.

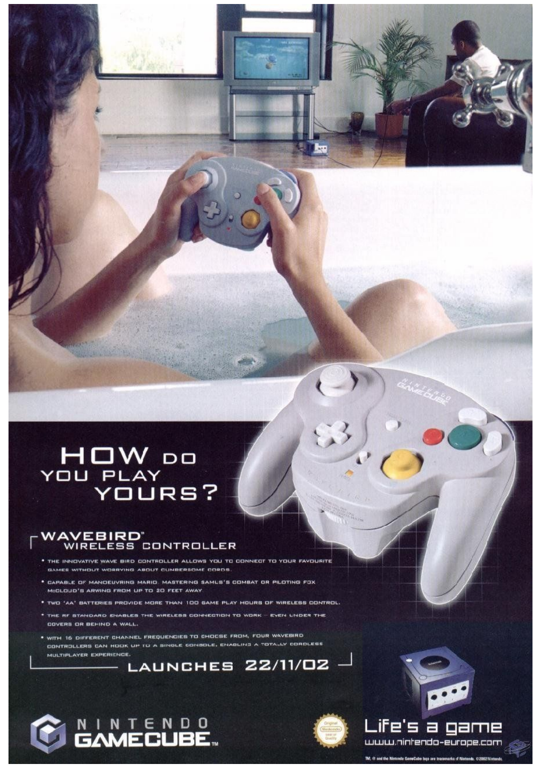

Figure 6.67: Magazin advertisement for Nintendo WaveBird. Published in several magazines. Nintendo, 2002.

The controller for Nintendo's 2017 Switch platform offers a unique example of how wireless technology can alter controllers, platforms, and gameplay. Like other versatile devices, the Switch can function as both a handheld and a stationary device. However, the Switch is unique in my data because of how its controllers support several default configurations. Figure 6.68 shows the platform in handheld mode with the controllers attached. Figure 6.69 and Figure 6.70—with a controller holder that comes with platform—show the controller(s) in configurations meant for stationary gameplay tethered to a television, with one player. Figure 6.71 shows only one half of the controller in a configuration meant for stationary gameplay where two players each use half of the hardware that made up the previous configurations while also—in this configuration—being a complete controller. Players lose access to the second directional stick and the shoulder buttons are reconfigured to previously disregarded or inaccessible buttons. For the switch, all of these configurations are the default. Each configuration is the same hardware and widgets being utilized differently by players, platforms, and games, made possible in part by wireless capabilities that tether and un-tether the controller to the platform hardware, and the two halves of the controller to each other.

Figure 6.68: Nintendo Switch platform and controllers in handheld configuration

Figure 6.69: Nintendo Switch controllers in one stationary configuration

Figure 6.70: Nintendo Switch controllers in one stationary configuration

Figure 6.71: Nintendo Switch controller in what is both a half-configuration and a third stationary configuration

Wireless technology can dictate the reliability of inputs and can reconfigure where and how controllers may be used, and by extension where and how digital games may be played. In the case of the switch, wireless technology supports on-the-fly transformation and divisions of the controller to support several configurations with the same device. While I do not consider wires or wireless technologies periludic they have the power to fundamentally influence how controllers may function periludically. A periludic lens helps to highlight how the wires and wireless technology that supports controllers constrains the physical range of participating in digital gameplay.

6.4. Broader controller implications

Controllers highlight how periludic interfaces support communication in two directions. To Genette, peritext communicates from publishers to readers how a text may be read. Controllers must communicate their affordances to players for gameplay to successfully commence. In addition, however, players must communicate their gameplay intent through controller inputs.

Commercially, controllers are defined as peripherals. As I noted in chapter two, scholars such as Sicart (2017), Marcotte (2018), and Blomberg (2018) discuss how controllers are too often left on the periphery of academic analysis as well. Controllers often fall into the category of functioning, and thus invisible, infrastructure for experienced players and game scholars alike

However, controllers are integral to the activity of gaming. Figure 6.72 is a screenshot of the top ten results of a google image search conducted in an incognito chrome window at time of writing for "playing video games." In most of these photographs, the focal point and centerpiece of gameplay is a controller. Although the activity of gaming is about playing games, these search results highlight how digital games must be played *with* controllers. Every practical, narrative, and even emotional interaction with games are mediated *through* controllers. Sicart references the interaction shown in Figure 6.73 to emphasize this point. We do not feel *in* games, we "press F to feel" (Sicart 2017). Or as the image itself portrays, we are not personally paying respects, we are pressing a button on our controller to have our character simulate the expression of paying respects in a digital game world.

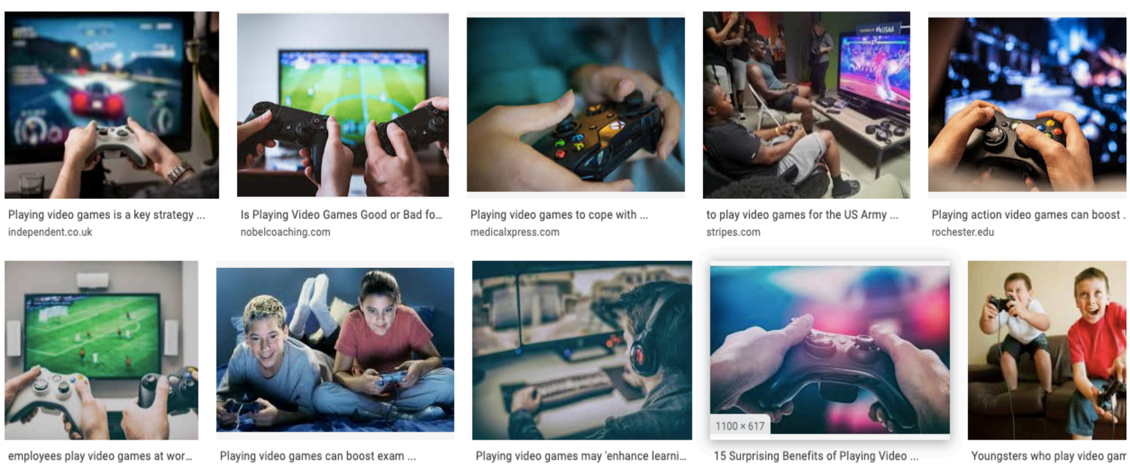

Figure 6.72: Top ten google image results in a search for "playing video games" conducted in an incognito chrome window in May 2020

Figure 6.73: Screenshot from Call of Duty: Advanced Warfare, 2014

For players, controllers direct gameplay by mediating *all* gameplay inputs. How successfully players may participate in any gameplay instance or activity is directly tied to how successfully they can perform appropriate controller inputs at appropriate times. No amount of game knowledge or gameplay tactics will allow a player to succeed if they are unable to input commands through some form of controller. No amount of leaning or arm flailing during intense gameplay will cause those motions to register gameplay outcomes if the controller isn't equipped with motion control.

For publishers, controllers constrict game design and resulting gameplay potentialities through limitations in available inputs. How effectively publishers can map in-game actions to controller inputs dictates what sorts of activities they may include in games. Publishers have found creative ways to map more than one activity to controller inputs by requiring players to interact with more than one widget at a time or enter multiple inputs in quick succession. However, no amount of creative game design or game software programming can materialize an accelerometer in a controller that does not have one.

In one of my interviews with designers, a participant told me a story that illustrates how creativity has its limits when it comes to controllers constraining design. At the time, I had not yet begun collecting controller data for this chapter. I had simply asked this person a general question about how they see the role of interfaces more commonly placed in the domain of usability or UI/UX within the process of game design. This person's immediate response was to tell me about having to cut an auxiliary mechanic from a game they had worked on because, after months of trying different approaches, the team felt they needed an additional controller button to make it fit into the core mechanics. This story treats the controller as an external constraint on the design process passed down from a platform manufacturer.

Controllers are more than simply a feature of platforms, however. Scholars have disagreed about whether interfaces are distinct from platforms (Montfort and Bogost 2009), or exist as part of a more complex platform assemblage comprising various elements (Boellstorff and Soderman 2017). This debate highlights the complicated position controllers inhabit *between* players, designers, games, and platforms. Like platforms, controllers have shaped and are shaped by the digital media they are used to interact with and the socio-technical contexts that surround them. While controllers are still designed and sold as components of platforms, my data show how their affordances, widget configurations, and influence over gameplay are decreasingly bound to the specific platforms they support. Although controllers may be intrinsic technical components of platforms, in this section I highlight how important an analysis of controllers and controller design divested from platforms can be.

Boellstorff and Soderman's concept of "transplatform" suggests a way of examining controllers beyond their immediate attachment to platforms. They use transplatform to describe how individual platforms are shaped by an ontological rapport *between* platforms (Boellstorff and Soderman 2017). In their example, Boellstorff and Soderman describe how the rivalry between Atari and Intellivision shaped the development of the two otherwise separate platforms during a relatively synchronic episode in the longer history of digital games.

In this section, I describe how controllers have shaped and are shaped by their attachment to different platforms, games, and game mechanics in a rapport that evolves diachronically across platform generations and the longer life span of digital games. Broad widget adoption or controller standardization across platforms or transplatforms emphasizes the value of correlating evolutions in controller affordances to gameplay innovations rather than any specific platform or group or generational contemporaries. I use my data to suggest how a periludic lens expands and unifies work by scholars such as Blomberg, Marcotte, and Sicart who attempt to situate controllers as an inherent component of gameplay activities, rather than only an interface component of platforms.

6.4.1. The *control* in controllers

Game controllers were born of necessity as gameplay moved to digital contexts. Players needed a way to *reach* gameplay that no longer played out with familiar cards, boards, and fields that players could hold or occupy physically. Publishers needed a way to facilitate gameplay. Players and publishers alike needed to rely on an interface to *control* the various elements of gameplay that they could no longer interact with directly.

When Beniger uses "revolution" in *The Control Revolution,* he refers to the common meaning that indicates dramatic change, as well as an older, astronomical usage that indicates the restoration of a previous state (1986). He describes "control revolutions" as responses to what he calls "crises of control" (1986). For example, Beniger describes how modern bureaucracy represents an important control technology—and control revolution—in response to a crisis of control brought on by the new technologies and industries introduced by the industrial revolution. Bureaucracy created new constraints on information processing and reciprocal communication that re-organized society around new technological innovations while consolidating familiar institutional powers to control how those innovations fit into a recognizable society (Beniger 1986).

The computerization of games represented a crisis of control because of the new realms of digital gameplay possibility it introduced. Controllers represent a control technology—and a control revolution—that constrains how gameplay inputs are processed and communication reciprocated while making some form recognizable gameplay possible. Controllers simultaneously mediate and re-mediate familiar gameplay elements into a digital context. Bolter and Grusin describe how remediation is "representation of one medium in another" (2000, 45). They write, "every act of mediation depends on other acts of mediation. Media are continually commenting on, reproducing, and replacing each other" (Bolter and Grusin 2000, 55). Although Bolter and Grusin suggest new media eventually *replaces* older media, it is only that we eventually experience new media as independent from older media. There never ceases to be representations of older media in new media. Many scholars have analyzed or applied remediation in games research (e.g., Bittanti 2003; Kirkland 2011; Girina 2013; Keogh 2014; Bolter 2016; Ivănescu 2019) Few scholars, however, have discussed how controllers function to remediate previous ludic practices (T. J. Tanenbaum and Bizzocchi 2009). However, in my data we can see the struggle to recreate, repurpose, and remediate older gameplay conventions into digital gameplay in the crises of control each widget and controller feature I have discussed in this chapter has gone through. The most notable, perhaps, in the desperate attempts to support a variety of directional widgets in early controllers before the settling on the generally standardized 2:1 stick to d-pad configuration in more recent years.

This broad crises of control via controllers, and re-mediation, in early gaming platforms has a notable exemplar in the Magnavox Odyssey, the first commercial electronic home-gaming platform (Smithsonian Institution n.d.). The Odyssey didn't have graphical interfaces the way we think of digital games having today. Instead, the Odyssey used semi-transparent films players adhered to their television screens so moving lights could project through them. Although not captured in my data focused on electronic controllers specifically, the platform used in my data collection came with dice, fake money, various tokens, and other elements of more traditional board games meant to be used alongside the platform.

Digital games remediate traditional gameplay in many respects. However, games are also a medium that remediates other mediums, such as writing and various visual arts. With the Odyssey, publishers, players, and platform manufacturers alike were still developing the skills needed to produce and consume this new medium of electronic gameplay and relied more heavily on closely remediating forms of gameplay interaction that resembled the board games of the era.

Scholars such as Sicart, Marcotte, and Blomberg help to position controllers into this story of remediated gameplay interaction and the broader history of control revolutions in digital gameplay. Blomberg emphasizes how controllers may connect or prevent the connection of expression to in-game content (2018). Sicart describes controllers as an architecture of limits (2017). Marcotte argues that revolutionary methods of control lead to revolutionary forms of interaction, communication, and gameplay (2018). Marcotte insights in particular help to link controllers and my data about controllers, the development of games as socio-technical information systems, and Beniger's broader history of control and information science

Although extensive in many ways, my data describe only one history of game controllers. Because my data include so many *default* and mainstream controllers, it illustrates a history of default, mainstream, and normative design. However, reflecting on this mainstream default history suggests an opportunity to examine rare, unique, or critically designed controllers that may illustrate moments when controller design *or* game design counter default and mainstream assumptions or expectations of what gameplay is or can be. For example, Marcotte and Dietrich Squinkifer's potted plant controller (Figure 6.74), created to reflect on controller design *as* game design, for their game: *Rustle Your Leaves to Me Softly: An ASMR Plant Dating Simulator (Squinkifer 2017).* Or, game scholar Patrick LeMieux's *Octopad* (Figure 6.75), that transforms every individual potential input from the original Nintendo Entertainment system controller into an individual controller to make a historically one-player experience a harrowing eight-player cooperative one (Couture 2019; LeMieux n.d.). Examples such as these force us to reflect on the interface-driven, periludic, constraints that shape gameplay by disrupting normative assumptions about controllers *and* game design in a way that complements my mainstream, default data with critical examples.

Figure 6.74: Marcotte and Squinkifer's plant controller, photo from (Marcotte 2018, credited to TAG lab 2017)

Figure 6.75: Lemieux's Octopad controller (LeMieux n.d.)

6.4.2. Accessibility

Accessibility is a critical potential consequence of controllers felt most immediately by players. Because controllers mediate access to all other elements of games, they can become a barrier to players who are unable to use them as intended or who do not possess the physiological capacities assumed by their manufacturers. Put in conjunction with histories of gameplay, my data that identify shifts in possible inputs and outputs can help highlight points where accessibly for some players may break down.

Different scholars and designers approach accessibility differently. Designer Kat Holmes characterizes issues with accessibility as potential mismatches between the capacities of users and the features of technology (2018). For technology to be more accessible, some HCI scholars argue designers should focus on designing for as many people as possible (Burgstahler 2009; Clarkson 2013; Story 2001). Some argue that accessible and inclusive designs should focus on the abilities of different users rather than their perceived deficits (Wobbrock et al. 2011). Some take this position further to describe how designers too often treat marginalized, non-normative users as "others" when they should treat them as *experts* (Abdolrahmani et al. 2020). Some scholars highlight how design should "incorporate users with and without disabilities [and…] address functional and social factors simultaneously" (Shinohara et al. 2018, 6.1). All of these scholars and more emphasize the importance of acknowledging and including the priorities of those with the least access early and often in the design process.

In a talk in 2017 at the GeekWire conference, quadriplegic designer Todd Stabelfeldt emphasized how inclusive, universal design is too often an afterthought when it needs to be integral from the beginning of a design process. He describes how inclusive tech provides convenience for general users and independence for people like him (Stabelfeldt 2017; Stiffler 2017). In a talk at the Society of Literature, Science, and the Arts in 2019, game scholars Lemieux and Boluk gave an analysis of Stabelfeldt's talk in line with Abdolrahmani et al.'s statement above, tied specifically to game controllers. Lemieux and Boluk described how controllers designed specifically for those with the least access from the beginning will only improve the experience of everyone (2019).

My data show how accessibility has never been a priority in game controller design. Commercially released interfaces that support non-normative assumptions of physiological ability, such as Nintendo's "hands free" controller released in 1989 (Figure 6.76) or Microsoft's Adaptive controller released in 2018 (Figure 6.77), are infrequent. None appeared in my sample. Most controllers in my sample are meant to be *held* by players with two hands and an assumed level of coordination not every player may possess. Dance pads (Figure 6.78), light guns (Figure 6.79), swords (Figure 6.33) or guitars (Figure 6.38), motion control, and every other controller in my data assumes and demands a certain *default* normatively defined player without any notable physical lacks or excesses that may affect hand-eye coordination.

Figure 6.76: Nintendo Hands Free controller for original Nintendo Entertainment System, released commercially in 1989. Image on the right is from the cover of Nintendo's original user manual

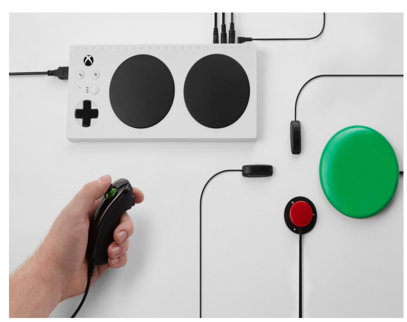

Figure 6.77: Promotional image from Microsoft for the Adaptive controller, including some of the possible input elements, 2018

Figure 6.78: Photo of Dance Pad controller for Nintendo GameCube, 2005, top

Figure 6.79: Photo of Nintendo Entertainment System, Light Gun controller,1985, left-side

Several scholars have explored how controllers influence accessibility in games (Bierre et al. 2005; Glinert 2008; Yuan, Folmer, and Harris 2011). These studies mostly focus on how a lack of fine motor control or sight may impact player accessibility. In a periludically aligned insight, Glinert observes that "the largest hurdle to involvement is the user interface, or how a player interacts with the game" (2008, 1). However, many of the critiques and interventions in this research area appear to focus on designing niche controllers to fit players with specific lacks or excesses, or to highlight games whose mechanics are more than generally accessible regardless of controller.

Looking at controllers periludically offers an alternative and cooperative approach to looking at accessibility alongside critical game studies, HCI-focused games research, broader accessibility-focused HCI research, and efforts to pursue universal design. Controllers mediate and translate different priorities and intents that in turn shape gameplay and player experience during the activity of gaming. *Periludic* helps reframe controllers as more than mechanical, physical interfaces or external constraint imposed by a platform that can be modified or designed independently to improve accessibility. A periludic lens emphasizes how intrinsically linked to gameplay, game design, and player experience any inclusive controller interventions must be to successfully improve accessibility.

6.5. Summary

Controllers mediate, translate, and communicate intent between players, publishers, platforms, and gameplay. Controllers are what allow players to directly influence digital gameplay in every meaningful sense. Controller inputs and outputs constrain gameplay mechanics, movement and perspective, and player activity in *and* out of games. Controllers are the interface to which publishers must map all in-game activity. Controllers are a focal point through which every other active element of gameplay must be mapped and may be observed.

Controller design dictates how games may be played, who may play them, and how every other facet of digital games may be interacted with. In a much more tangible sense than my previous two examples, controllers are the *fringe* of gameplay that control the playing of games in a digital, physical, and periludic sense. Controllers dictate gameplay options for players and publishers alike. Controllers of some kind were a necessary adaption to the development of computerized gameplay. However, intentionally or not, their essential role as the only physical component of digital gameplay means they may become a barrier to gameplay for anyone who may be unable to physically use them. Controllers periludically format digital gameplay and standardize means of interaction in ways that reproduce normative assumptions of how gameplay may be facilitated and who may count as players. Periludic, controller-centered analyses can highlight how even small interventions in the design of these interfaces can influence every other aspect of digital games and gameplay.

Chapter 7.

Broader Integrations

A periludic lens helps pinpoint transactions of power and authority that surround and influence games and gameplay. This lens helps players by encouraging them to pay more attention to the underlying systems that support their everyday gaming and enhancing their ability to articulate concerns they may hold about access or inclusion. This lens helps designers confront and overcome limitations imposed on them by—or that they impose on others through—the ecology of interfaces that support the activity of gaming. This lens helps researchers more effectively examine the influence of broader social concerns in the design and presentation of digital games and the nuanced facets of the mediated relationships players have with publishers, platforms, and games.

Each periludic interface in the previous three chapters demands players conform to implicit and explicit norms in return for gameplay access. These conditions of access reflect the priorities of publishers, designers, and platform manufacturers about how games should be played and too often center certain player identities, bodies, and experiences, while marginalizing and excluding others. Authentication interfaces demand players provide personal information, submit to legal regimes, and enroll in networks of surveillance and algorithmic influence. Character configuration interfaces demand players accept the limited embodied performances they are permitted to enact in games. Controllers constrain modes of dynamic gameplay expression and demand players conform to certain physiological assumptions.

In Chapter two, I described how many contemporary media and game scholars have productively moved away from Genette's focus on authors and publishers to celebrate player created epitextual productions. However, I redeploy Genette to shine a light back on publishers and how they use periludic interfaces as levers on players to enable or enforce their priorities and assumed modes of gameplay. To Genette, paratext, especially peritext, is "always [a] bearer of an authorial commentary either more or less legitimated by the author, [and] constitutes, between the text and what lies outside, a zone not just of transition, but of *transaction*; the privileged site of a pragmatics and of a strategy, [and a more] pertinent reading … in the eyes of the author and his allies" (1991, 261–62, emphasis in original). I apply this piece of Genette's analysis to examine how publishers use periludic interfaces to mediate how players transition into games and dictate transactions of access, information, and performance.

In this dissertation, I have examined how the construction of three examples of periludic interfaces influences the roles of those who make and study games and shapes the activity of everyday gameplay. In this chapter, I suggest some of the broader practical impacts centering these interfaces can have on the activity of gaming and the practices of game design and game research. Using my three examples as a baseline, I suggest other potentially powerful periludic interfaces for future work.

7.1. A brief background of how this research evolved and the origin of the *need* for periludic

The research stream that eventually evolved into this dissertation began as a pilot study of representational possibility in a small set of massively multiplayer online games that previewed many of the findings I present in this document and some of the implications for those who play, make and study games. At the time, there was an increasing amount of research that examined the representational characteristics of pre-defined characters or the broader phenomena of representation in games from a variety of angles (Cassell and Jenkins 2000; Beasley and Standley 2002; Leonard 2004; Burgess, Stermer, and Burgess 2007; Kafai et al. 2008; Higgin 2009; D. Williams et al. 2009; Huh and Williams 2010; Kafai, Cook, and Fields 2010; Shaw 2014; Lynch et al. 2016). However, I was interested in examining the characters players make themselves in games with parametric customization. Although Initially I began examining character configuration systems for leads on how I might frame questions directly to players about their characters, my observations led me to reprioritize my research agenda.

Even in this earlier study, I observed inequalities and inconsistencies in the sorts of characters that were *possible*. What I saw recalled the sort of lack or erasure of diverse bodies that scholars such as Higgin (2009) and Kafai et al. (2010) observed in the character customization options of previous online gameworlds. I observed an absence of certain racialized features and inconsistencies in gendered parametric choices. Or, more precisely, I saw parametric choices made to be gendered by interface design.

An odd yet still illustrative example of gendered interface-driven constraints I observed in this original pilot study comes from Guild Wars II (GWII). In GWII, there are five “races” (species) players may control. All female-designated characters except for those belonging to a species of large anthropomorphized horned cats have an additional slider widget that male-designated characters do not have. This feature, labeled “cheeks,” dictates how puffy a character’s cheeks are (Figure 7.1 versus Figure 7.2).

Figure 7.1: Screenshot of customizing Sylvari female-designated character with cheek slider, in Guild Wars II

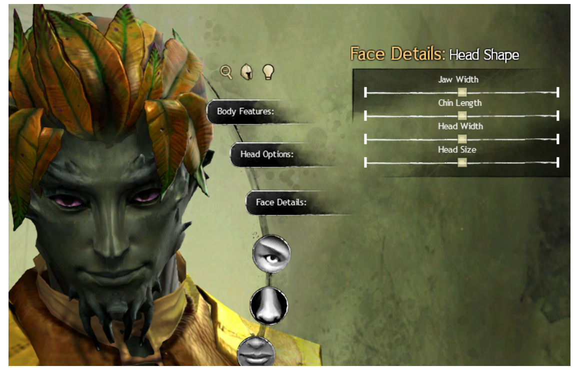

Figure 7.2: Screenshot of customizing Sylvari male-designated character without cheek slider, in Guild Wars II

This example and others like it began to foreshadow the findings of this dissertation and caused my interests to shift from what characters players create to what characters publisher *permit* players to create. In GWII, players are not permitted to give their male-designated characters puffy cheeks. At some point, a designer or developer *prioritized* making the cheek slider available *only* to female-designated characters and not male-designated characters. At some point, the decision was made that players hoping to play a puffy-cheeked character must submit to the norms set by the publisher that permitted only female-designated characters to possess this characteristic.

I began to see character configuration as a form of performative terms and conditions to which players must conform, to maintain gameplay access in much the same way as any EULA dictates general player behavior. And much like assent to EULAs, some players may skip right past character configuration while others may spend hours combing over every detail before moving on. However, every player *must* accept either a default or negotiated embodiment to access gameplay. I found little research about the transactions I was observing, so I began to consider other interfaces that similarly functioned peripherally at the threshold of gameplay hoping to find additional literature.

After several iterations of literature review, I developed *periludic* as a collective name for these interfaces I was observing that acknowledges the authority they wield and the relationships they mediate. Re-forming peritext into periludic supports a unified articulation of the relative mechanical positioning and level of influence otherwise functionally dissimilar interfaces have over games. *Periludic* unified the analysis and implicitly acknowledged relationships on the periphery of central claims by scholars I have highlighted throughout this dissertation and the relationships I was seeing in my data. For players, designers, and other researchers, a periludic lens aids similar acts of unification and articulation when it comes to interfaces such as, and resembling, those I describe in this dissertation.

7.2. What a periludic lens does for players, the activity of gaming, and game-related productions

The value players may find in the peirludic concept may vary greatly based on their background and gameplay practices or priorities. However, a periludic lens can help players locate, contextualize, and precisely articulate activities that may involve game software or platform hardware yet do not include in-game gameplay or gameworlds.

For example, a periludic lens can help players contextualize a wide variety of metagaming activities. Metagaming describes a range of activities players may incorporate into their broader gaming practice. Boluk and LiMieux describe metagaming as “a critical practice in which playing, making, and thinking about videogames occur within the same act” (2017, 2). “More than games about games,” they continue, metagaming includes “the most complex house rules, arcade cultures, competitive tournaments, and virtual economies to the simple decision to press start, pass the controller, use a player’s guide, or even purchase a game in the first place” (2017, 3). “The metagame emerges as the material trace of the discontinuity between the phenomenal experience of play and the mechanics of digital games. From the position in front of the television, posture on the couch, and proprioception of the controller to the most elaborate player-created constraints, fan practices, and party games, metagames are the games created with videogames” (Boluk and LeMieux 2017, 9). Metagaming activities are those which draw in other activities and resources into the gaming experience.

Metagaming may describe improving gameplay performance with the aid of knowledge and expertise beyond what is immediately available in-game. In contemporary digital game communities, "The meta” refers to a prevailing canon of knowledge on playing a game as effectively or optimally as possible (Newell 2018; North 2019). For players who generate meta-knowledge, periludic interfaces can shape the experiences they hope to describe or document or that they may otherwise rely on for framing their productions. Those who write guides or populate wikis need to describe how difficulty settings influence their information and they may suggest specific character configurations, settings changes, or to re-map controller button/widget configurations to achieve some goal.

Character configuration is a common site of metagaming. Any time a player chooses a specific character, species, or profession to maximize in-game mechanical advantage, to optimize cooperation with a teammate, or to counter an opposing player's choices, they are metagaming. This sort of pre-gameplay optimization resembles the *metagame* team captains in many traditional sports conduct when drafting players before a match. For scenarios where players may not change characters once gameplay begins, character configuration interfaces are a transition point where metagaming *becomes* gaming. However—in line with Boluk and Limieux's descriptions—metagaming does not necessarily *need* to pursue optimization. All the effort a player expends thinking about what kind of character they want to make—visually or narratively—is metagaming, as the player begins to envision the game's story playing out with one sort of character or another.

Metagaming can describe all the efforts that players put in to create or customize an ideal embodiment in games. However, some players *must* metagame to enact a virtual body that somewhat resembles their own, while others do not. Some players may not be able to enact a virtual body that resembles their own no matter what and may metagame simply to create a character they enjoy for other reasons or simply to conform less to a provided default. As my data in chapter five show, women and players of color are significantly more likely to have to conform their embodied in-game performances to a body other than their own and white male players are more rarely *required* to metagame simply to play a character that shares their demographics. A periludic lens can help these players to articulate how they experience representation as a characteristic of the games they play *and* a choice, trade-off, and transaction they must settle prior to accessing gameplay, and that demands more from players who are not white men.

Controllers are another important site of metagaming. In chapter six, I describe how controllers constrain gameplay inputs in various ways. However, players develop all sorts of ways to perform those inputs, metagaming more efficient, effective, or humorous ways to hold their controllers (Figure 7.3 and Figure 7.4).

Figure 7.3: a variety of ways to grip controllers more effectively, image from PC Gamer, originally sourced from reddit (2020)

Figure 7.4: Humorous proposal for an alternate way for players to use the Nintendo 64 controller, sourced from N64 Today (Watts 2018)

Players with physiological capacities not aligned with default game accessibility who must take extra steps to participate in gameplay must consistently metagame. As I said in chapter six, alternative controllers designed for accessibility are rare. Configuring settings, controllers, or physical space itself to accommodate a mismatch of access is another form of gameplay optimization and metagaming. Any player may metagame to achieve their ideal gameplay performance or mechanical outcomes. However, these players must metagame to simply to access basic gameplay or to conform as closely as possible to normative means of interfacing with gameplay. A periludic lens can help these players to articulate and contextualize the metagaming labor they must expend to access default gameplay experiences.

Clearly recognizing and contextualizing periludic elements of games can support players producing epitextual content as well. For example, video and streaming content—recorded or live broadcasts of gameplay—are increasingly powerful examples of player produced epitexts that represent a growing sector of the gaming community (Kaytoue et al. 2012; Burwell 2017; Sjöblom and Hamari 2017; Wong, Rigby, and Brumby 2017; Taylor 2018; Cullen and Ruberg 2019; M. R. Johnson and Woodcock 2019; Ruberg, Cullen, and Brewster 2019). Depending on the gameplay activities players are recording and/or streaming, they may need to communicate their settings to calibrate viewer expectations. These players may need to be aware of how periludic interfaces integrate with external recording activities or impede them. For example, some games are now released with built-in integration with Twitch (Setupgamers 2021; Streamer Tactics 2020), a prevailing streaming platform. Players streaming games without Twitch integration must rely on external software and additional overlays on their gameplay to produce their content. Although savvy streamers and successful content producers may already be hyper aware of these peripheral facets of their craft, a periludic lens can help contextualize and communicate how these gameplay and non-gameplay-centered facets interact to those hoping to begin these activities.

Monster Factory, the YouTube series I mention in chapter five, is a constructive example that combines metagaming and epitextual content production (McElroy and McElroy n.d.). The series itself is hosted and consumed epitextually. However, the *play* the McElroy Brothers participate in and record is a sort of metagame occurring in the character configuration interfaces of game software rather than in-game gameplay. *Monster Factory* is an epitextual production focused on metagaming occurring in a periludic interface. The McElroy brothers must be intimately aware of how periludic character creation interfaces function and influence gameplay outcomes and how other periludic configurations may or may not logistically integrate with or influence their recorded and recording activities to successfully create their content.

Streaming often focuses on players who are highly skilled or participate in competitive gameplay contexts or who participate in alternative modes of play such as speedrunning—where players attempt to beat a game in as short a time as they can. Speedrunning is another form of metagame that relies on highly optimized gameplay and even the intentional use of glitches to skip through a game as swiftly as possible (Lafond 2018; Ruberg 2020).

Players require a great amount of familiarity and skill with controllers to participate in highly effective or competitive gameplay, or highly efficient gameplay such as speedrunning. High precision gameplay requires firmly established expertise with controller interfaces and high precision attention form the players. If competitive players or speedrunners who stream fail to adequately account for the role of their controller, it may derail their in-game performance *and* their epitextual production. Players with physiological capacities not aligned with default game accessibility who wish to perform competitively or produce epitextual content take on all this labor in addition to the excess metagaming I described above.

The more players participate in metagaming or epitextual productions that require a deeper understanding of games and gameplay, and/or the farther they are from the normative defaults that publishers and platform manufacturers assume of players, the more value periludic may have as a concept. A periludic lens highlights the trade-offs and labor of players who participate in gameplay in such a way that requires a greater knowledge of the interfaces and infrastructures that support and influence gameplay, and/or for whom special attention to these interfaces is an inherent part of accessing gameplay. In addition, a periludic lens can serve as a communication or learning aid that helps introduce newcomer or would be meta and epitextual producers to details of these activities and invites those who do not have to do extra work to access even "ordinary" gameplay to recognize the additional labor involved by those who do.

For players who are excluded from games or wish to decrease exclusion in games, a periludic lens can help frame more precise and constructive critique or requests about games. Although not all of the responsibility and labor of improving games should not fall to players, games rely on player feedback to evolve. At some levels, this work becomes shared. The better and more precise players are able to articulate their criticisms and demands, the better a responsive industry can take action. *Periludic* can help players improve their critiques by better understanding and precisely identifying problematic components of games and game software. How to increase or maintain the responsiveness of the industry is, unfortunately, beyond the scope of this research.

Players need not utilize a periludic lens for it to impact them. The increased awareness and consideration of periludic interfaces that I will suggest for designers and researchers below can improve challenges players face with accessibility and representation or self-representation or may face with privacy and enforcement of legal relationships. In addition, an increased consideration of periludic interfaces by designers improves the general effectiveness of the medium of games. Despite arguing that the power of a periludic lens is to go beyond usability and user experience, a greater consideration of periludic interfaces still improves how well designers can support the activity of gaming in more traditional ways as well.

7.3. What a periludic lens does for game design

For game designers, a periludic lens elevates the role of UI/UX design and provides an opportunity to reflect closely on facets of game software development beyond gameplay. Attending to the periludic emphasizes how usability is more integral to digital game design than it is sometimes treated, and how it influences critical aspects of the gameplay experience beyond how effectively a player navigates game menus and understands HUDs.

Publishers and development teams often undervalue the design and implementation of periludic interfaces. Seven of my ten interviewees described how the integration of these interfaces often falls in the latter cycles of the design process. Two interviewees described working on these interfaces as "systems" work and nine explicitly differentiated what they worked on from game design or gameplay. Another interviewee partly dismissed the value of the interfaces they themselves design, saying "no one comes to see the menu, let's be real." This interviewee described all elements of menus and non-gameplay centered facets of game software as a "shell" whose job it is "to help players get into the game as quickly as possible." Although this interviewee devalues these interfaces compared to gameplay, their characterization of the task these interfaces have partly belies their own analysis. A small reword with a contextual synonym offers an apt periludic insight aligned with the analysis of Genette and Derrida: That is, these interfaces "help players [*transition*] into the game."

In another periludically aligned insight, nearly every interviewee either implicitly or explicitly referenced an idea that when these interfaces are designed well, no one notices them, yet when they are designed poorly, everyone notices them. Several interviewees referred to user experience professional Steve Krug's *Don't Make me Think: A Common Sense Approach to Web Usability* (2014). As the title may suggest, this is not a book about game design and Krug's central tenet is that users should need to give interfaces as little conscious thought as possible. Krug's book relies on a specialized, professionalized recounting of some of the major themes in design researcher Don Norman's influential book, *The Design of Everyday Things* (1988), is that items should afford intended functions as intuitively as possible. However, designing affordances to be function intuitively and designing them to go unnoticed are not quite the same thing. This goal of designers I spoke with to aim for invisibility recalls Derrida's fading painting frame. Like Derrida does with his frame, these designers recognize how the interfaces they develop support the games they surround while (ideally) disappearing from our attention. Unlike Derrida and his painting frame, however, these designers do not always appear as aware of the integral and infrastructural role their creations play in the activity of gaming.

From a broader industry standpoint, this aim for invisibility serves to undervalue the designers that create these interfaces. Some interviewees noted how the interfaces they work on have become more important to some publishers in more recent years. However, most interviewees described or made comments that suggested how UI/UX or usability is commonly a lower priority in the larger game design processes that consistently falls at a later point in the design cycle. One interviewee described how, even though their job has become more collaborative with lead game designers over the years, evolving from almost a consulting role where they offered designs and received feedback back and forth, they are still only called in late in the design pipeline.

Larger publishers can be highly compartmentalized, which may lead to more collaborative relationships still being rare. During an informal discussion while recruiting for interviews, I asked a game artist at a large studio if they knew any people who worked on UI/UX or usability. Their response was, "I don't know anyone from the client-side … I am pretty sure I know where they sit but I don't know any of their names." This artist whose work is unquestionably a part of in-game activities had been working at this company for nearly ten years at this point and had never had a meaningful collaboration with those who produce the software "client" his work resides within. Client in this case becomes synonymous with the earlier interviewees' use of "systems work," and similarly compartmentalizes labor and components of the larger game software development practice.

A periludic lens can help unify the game design process and reduce compartmentalization by highlighting interrelations between too often disparate aspects of game production. One interviewee described how at some studios these interfaces can be as important an intersection between artists, designers, and engineers as visual in-game mechanics. *Periludic* as a concept emphasizes how digital game design is more than designing gameplay experiences within a game software shell. Digital game design combines the complexities of producing games *and* producing software.

The reminder that digital games are games *and* software, and the emphasis of UI/UX and usability encourages a player-centered approach attuned more closely to the discourse that surrounds the value and controversies of the more common, broader concepts of user-centered, or human-centered design (Kling 1977; D. Norman and Draper 1986; D. A. Norman 1988; Gabbard, Hix, and Swan 1999; Buchanan 2001; Salvo 2001; Gasson 2003; Abras, Maloney-Krichmar, and Preece 2004; Mao et al. 2005; Pagulayan et al. 2009; Lowdermilk 2013; Brulé and Kazi-Tani 2015; Endsley 2016; Ramler 2020). A periludic lens can draw game designers' attention to how this intersection of game design and software development can personally and socially impact players in ways I described in the previous section. Even if players do not come to digital games for menus, they cannot make it into digital games without them. How much "everyone" notices these interfaces when they are poorly designed, as several interviewees put it explicitly, highlights how essential they, and the often-infrastructural support they provide, are to digital gaming. *Periludic* can help to game designers reflect on how these interfaces directly influence the accessibility *and* playability of their games, not simply the usability of a game software shell. A periludic lens encourages game designers to look farther than in-game interactions when designing their digital games to support a more unified, inclusive, and successful gameplay experience.

Members of the industry do appear to be becoming more responsive to the broader personal and social needs and demands of players. For example, as I mention in chapter six, publisher and platform manufacturer Microsoft released its adaptive controller in 2018, the most recent and most extensive controller geared toward making games more accessible to people with a variety of physiological capacities (Microsoft 2018). Color blind modes that shift the spectrum of rendered colors and increase visual accessibility are commonplace in contemporary game software releases (Brown and Anderson 2020; Can I Play That? n.d.) and are set in periludic menus prior to gameplay or accessed by pausing it. While data like those on playable characters that I present in chapter five must be collected regularly to actually know how representation continues to shift, there are recent examples of publishers actively updating or changing how character configuration occurs in order to be more inclusive. For example, with its recent Shadowlands expansion, Blizzard has finally added Black and Asian character models to the character configuration of their popular 15-year-old game, WoW (Purchese 2019; M. Williams 2019; Parrish 2020). As another example, character configuration in game Cyberpunk 2077, released as I am finishing writing this dissertation, displays similar design priorities as the previously unique Saints Row series described in chapter five, by not restricting key customization elements by gender, including the attachment of any sort of genitalia to any character (Bailey 2020; Marsh 2020; Tassi 2020).

While all of these interventions *influence* gameplay outcomes and player experience, none required fundamentally different approaches designing in-game mechanics or narrative. Instead, they rely on altering the mediation between players and games or changing the process of transitioning players into games. The Microsoft controller adapts to the players, not games. Color blind mode changes how a game renders, not how it intrinsically plays or progresses. None of the changes made to character configuration in WoW, nor the design choices made in Cyberpunk 2077, influence the constitutive or operational rules of their respective games. However, all of these examples should highlight to game designers how changes to periludic interfaces can *inherently* and dramatically change and/or improve how players may play their games.

For designers who wish to make games more accessible, or wish to decrease exclusion in games, or even who simply wish more people *can* play their games, a periludic lens helps to identify precise opportunities to address these concerns. A periludic lens illustrates how deeper integration of more sensitive UI/UX research and usability that goes beyond simple effectiveness can strengthen the overall player experience for *all* players.

7.4. What a periludic lens does for games research

In my introductory chapter, I described how games research often focuses either on game content or the experience of players. The greatest value of a periludic lens for researchers is its ability to bring into focus underacknowledged and understudied relationships *between* players and games, and between production, consumption, platforms, and design. As I wrote in my introductory chapter, periludic interfaces function as a threshold to games. However, thresholds connect as well as demarcate separate domains.

Attending to periludic interfaces augments and connects existing research domains. Just as a periludic lens helps examine interfaces *between* players and games, it helps identify and fill gaps *between* well-established research areas or disciplinary approaches that focus on players or games by highlighting inter-relatedness between these more familiar subjects.

In each of the previous three chapters, I suggest some of these connections. Examining authentication interfaces connects games research to the study of security and privacy, algorithms and data science, and more traditional information sciences and the study of archives. A periludic lens highlights the transactions that enable many of these infrastructural and data-driven facets of digital games and demand players enroll in the relationships that support them. More closely examining character configuration interfaces reinforces already well-established relationships between games research and critical race, gender, and sexuality studies as well as more traditional literary and media interpretative traditions. A periludic lens highlights the interactions that dictate which bodies become the subjects of the more heavily studied conditions of representation and inclusion in games while acknowledging how players may have limited, yet important, influence on some of those bodies. Examining controllers connects game studies, HCI, and accessibility studies in new ways. A periludic lens highlights the physical interfaces that either permit interaction with digital gameplay or serve as a barrier to entry. Finally, a periludic lens brings into focus all the transactions and activities of players in and around games I described in the first section of this chapter, and the activities of designers I describe in the second. Studying these interfaces draws attention to critical aspects of the phenomena of usability, games and game design, and the relationships players have with games that often go under-acknowledged or that are difficult to observe *in* games or by studying only players.

Periludic helps suggest critical adjustments to methodological scope that go beyond or counter design priorities. That periludic interfaces can dissolve from our attention as we engage too closely with the games they support, or players, threatens our understanding of the greater phenomena of gaming. If we as researchers permit these interfaces to fade from our attention as UI/UX and Usability designers hope they do, then so too does our ability to attend to their intended and unintended consequences. A periludic lens mitigates this threat by drawing attention to interfaces and sites of mediation that otherwise fade from our attention—by design—as we engage too closely with games.

For example, Figure 7.5—which first appeared in chapter four—contains an account verification interface for previously verified accounts on an Xbox One platform. This image is not a screen capture. Although the Xbox One has a screen capture function, it *does not allow* captures of even intentionally foregrounded system functions like the one pictured. When I attempted to do so, the platform automatically minimized all system overlays to capture the assumed focus represented by the game software and gameplay I had intentionally backgrounded. I had to capture this image with an external device. Because the platform manufacturer assumes the priority of players is to capture only gameplay, they made the periludic authentication function I was observing invisible, or at least unobservable to the screen capture function. That is, an observer or data collector cannot visually record an element of the authentication process on the screen without external tools, despite internal tools existing to visually record screen content. This example highlights conceptual and practical challenges to studying authentication in games and player experience and how a periludic lens may help.

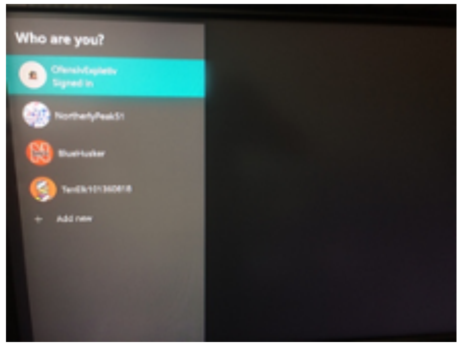

Figure 7.5: Xbox active account verification of previously verified and remembered accounts

Broadly, a periludic lens resides within intersecting research areas (Figure 7.6) and intersecting disciplinary approaches to games (Figure 7.7) and suggests integrations where broader disciplinary and theoretical traditions come together. *Periludic* emphasizes the practical and mechanical relationships between players, games, publishers, researchers, *and* topical research areas. A periludic lens augments and helps to locate and precisely study aspects of familiar issues in games such as accessibility, privacy, representation and inclusion, and design by highlighting transactions that contribute to the formation of these issues and the interfaces that enable and enforce these transactions and their outcomes for players.

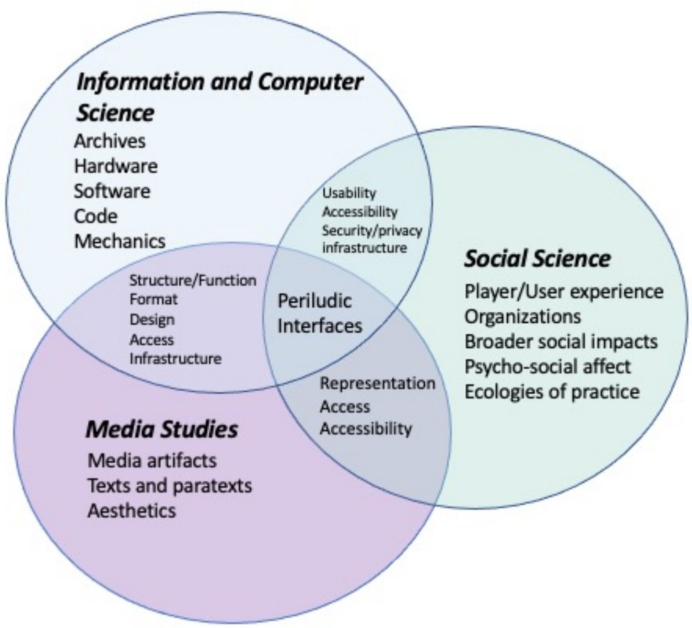

Figure 7.6: Topical intersections

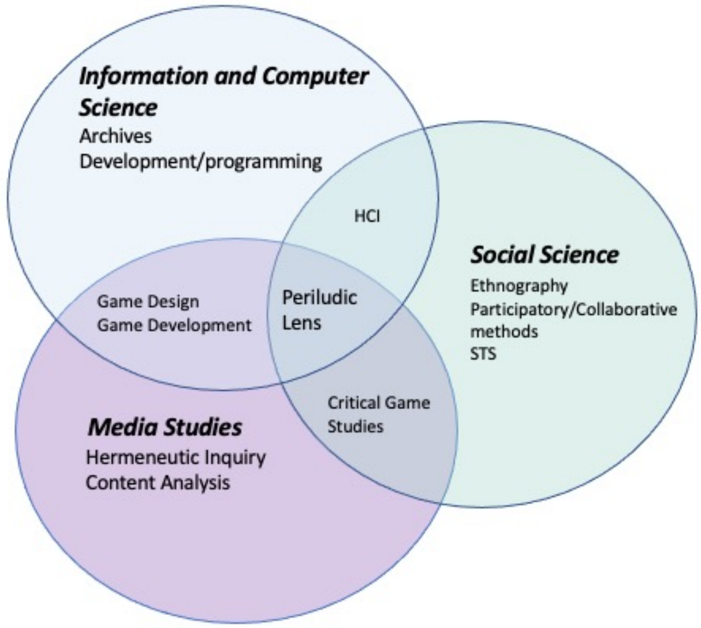

Figure 7.7: Intersections of disciplinary approaches

A periludic lens helps locate where transactions of authority and relationships between players and games can come to matter within the practical and theoretical topographies of game research. Because this lens resides at an intersection of theoretical and disciplinary approaches, there are other directions from which we can approach it that further highlight the integrations it suggests within broader research domains. For example, Although I have relied primarily on literary and media studies to theoretically ground this dissertation, a Science and Technology Studies (STS) framing can help in this locative/topographic context.

Periludic emphasizes the relationships players, publishers, and platforms have with digital games and game software and STS is an inter-discipline committed to articulating socio-epistemological, socio-ontological, and socio-technical relationality. Broadly, STS concerns the interplay between scientific and technological processes and their socio-political, cultural ecologies. Scholars such as Fleck (1979), Kuhn (1962), Pinch and Bijker (1984), Latour (1987), Haraway (1988), and Barad (2007) have examined the construction and deconstruction of scientific practice. Various scholars, such as Star (1999), Bowker and Star (2000), Lee (2007), and Starosielski (2015) have applied STS frameworks to information and computer—and digital—technologies and their infrastructures more specifically. Scholars such as Giddings (2006), Steinkuehler (2006), and Taylor (2009) have described specifically how STS or STS concepts may apply to games and the practices of games research, game design, and gameplay.

In "The Mangle of Play," Steinkuehler argues for the application of the concept of "mangle," previously theorized by Sociologist and STS scholar Andrew Pickering (1995), to games (2006). Pickering describes the *mangle* as the performative, recursive, *mechanically mediated* dialogue with material agency that both influences and is influenced by temporal human intentionality (1995). To Pickering, we tune machines to interact more effectively with material agency and create *models* that dictate how we define effective interaction with material agency, which in turn tune or constrain our own ability to interpret that agency and create new models, and machines, ad infinitum. Steinkuehler uses emergent culture and gameplay practices of players in the MMO Lineage II to discuss the making and remaking of gameplay practice and culture between players and each other and publishers, with the game itself as a site of mechanical mediation (2006).

Instead, however, we might apply the mangle to articulate the relationships players or developers have with the virtually material agencies of digital games and gameworlds themselves. When observing game development practice, each finished digital game becomes a single point in a broader machine-mediated exploration of what games *can* be. Scholars such as Dourish and Button (1998), and Cross (2001), have described the overlap between research and design. Barab and Squire address this overlap in games more specifically (2004). To create digital games, publishers rely on computers and utilize or create "engines" the emic term to describe the packages of software that make up the *means* of processing graphics, physics, and other world building components of games (Lewis and Jacobson 2002; Paul, Goon, and Bhattacharya 2012). Game engines are akin to Pickering's models made downloadable, distributable, and executable. Game engines are all-in-one machines *and* models for contending with virtual material agency. They are tuned or updated or rebuilt from the ground up to reflect broader technological or creative influences, much the same way Pickering describes his models.

Periludically, I would argue the mangle may be reformed to center on the *machine-mediated* practices of every-day gameplay. Players too become analogous to researchers or designers in this context. Each new game or gameworld players encounter requires analysis of new virtually material systems that leads over time to a greater and more productive understanding of games and gameworlds as a whole. Repeated, *machine-mediated,* participation in gameworlds tunes and is tuned by player knowledge and expertise. Although players may not develop the periludic interfaces that mediate their access to gameplay, they tune their in-game performance through them as these interfaces in turn tune player expectations. The trends in controllers I describe in chapter six, and the controller metagaming I describe above (and pictured in Figure 7.3 and Figure 7.4) especially highlight how players and platform manufacturers alike construct *models* for how to effectively interface with virtual gameworlds in a direct, physical, mechanical sense. A periludic lens becomes a tool for interrogating the complex mangle of interfaces that exist to mediate players, publishers, and the virtual material agency of gameplay.

In "The Assemblage of Play," Taylor argues for the application of the concept of "assemblage" to games (2009). Assemblage is a term heavily theorized by philosophers, anthropologists, and STS scholars such as Deleuze and Guattari (1987), Latour (1991), Ong and Collier (2005), Rabinow (2011). Somewhat simply, without going too far afield, assemblage functions in all of these cases to acknowledge and demarcate contextually defined convergences of agential, technological, political, ethical, and/or geographical elements. Primarily through examples of game-modification, Taylor argues for the value of applying the concept of assemblage to the phenomena of gameplay. She writes, "The notion of assemblage is one way to help us understand the range of actors (system, technologies, player, body, community, company, legal structures, etc.), concepts, practices, and relations that make up the play moment. […] Thinking about games as assemblage, wherein many varying actors and unfolding processes make up the site and action, allows us to get into the nooks where fascinating work occurs; the flows between system and player" (Taylor 2009, 332). Periludic interfaces exist in these nooks between system and player, mediate so many of the actors Taylor describes, and make so much of the fascinating work that constructs the assemblage of gameplay possible.

Feminist STS scholar and Physicist Karen Barad helps to bring this sub-section together. To Barad, phenomena are the "basic units of reality" (2007, 33). She denies the individuality of different agential forces beyond their involvement in phenomena: "Agencies are only distinct in relation to their mutual entanglement; they don't exist as individual units" (Barad 2007, 33). Barad describes reality as a "dynamic and shifting entanglement of relations" *between* agencies rather than a characteristic of them (2007, 35). Agential elements become components entangled together to constitute phenomena. Barad highlights how studying phenomena permits a greater understanding of their components than we may achieve only by studying single components directly.

Barad explains how the practice of making epistemic and methodological "cuts" determines which properties of phenomena will be included or excluded in research. In her original point, Barad uses a close reading of the play *Copenhagen* and the work of its two non-fictional main characters—early quantum physicists Heisenberg and Bohr—to question a world made of things with *any* independently determinable properties. She re-articulates a point made by Bohr in the play that, in physics and general scientific practice, our choices of what to observe or measure *causes* certain properties of our subjects to "*become determinate"* at the exclusion of others (Barad 2007, 19, emphasis added). The cuts we make may support conscious methodological choices informed by the specific needs of a study or be in service of a specific practical outcome. Often, cuts are made in line with broader socio-cultural material-discursive practices that constrain our understanding of phenomena in traceable ways

Many of Barad's examples revolve around momentum and position, because these properties are at the heart of the debate the two characters are having in *Copenhagen,* they are the central tenets of Heisenberg's well-known "Uncertainty Principle," and they are common concerns of physicists. As an example, we can look at a baseball thrown by a pitcher practicing with a catcher at home plate on a baseball field. If we wanted to seek to *determine* the position of the ball at a point after the pitcher threw it, and after it had lost its momentum, we might make certain cuts in our attempt at determination. Even if we didn't observe the pitch itself, having knowledge of the general practice of baseball and the material-discursive roles of pitchers and *catchers*, it might make sense to remove the pitcher from our initial attempt to determine the new position of the ball and look to the catcher. Our knowledge configures the materiality of this situation. Causality as we understand it, and the intra-action that creates the phenomena of a pitch, demands we *cut* the pitcher from our field of observation of ball position.

Barad uses the term "apparatus" to explain the origin and reproduction of cuts. She describes apparatuses as boundless, yet boundary-making phenomena "constituted, and dynamically reconstituted as part of the ongoing interactivity of the world," (Barad 2007, 146). To Barad, apparatuses are material *and* discursive practices formed of, and formative of, "matter and meaning, productive of, and part of," phenomena they produce (2007, 146). Barad combines Butler's performativity that refuses to acknowledge a coherent, terminal subject not continuously (re)forming (2007, 57, 61) and Foucault's description of the "formation of the subject" in dialogue with prescribed meanings and ways of thinking to articulate her analysis of a world in a constant state of becoming or mattering (2007, 62–65), and a continually refiguring of the study of that reality.

Gameplay, digital gameplay, and games research are Baradian apparatuses that configure our understanding of games, their study, and the relationships between players and games. I use my data and a periludic lens to show that games researchers too often *cuts* periludic interfaces from of their observations of the phenomena of gameplay. We must recalibrate our material-discursive scholarly practices grown out of pre-digital games, gameplay, and players to include periludic interfaces and components of game software and platforms that are equally essential to the creation and implementation of the phenomena of digital gameplay as anything in-game. Aside from the transactions of authority and conformity I describe above, *periludic* helps better understand the critical and mundane ways publishers, players, platforms, games, and game software inter or intra-act to make gameplay matter.

A periludic lens opens up an entire region of understudied game-related interfaces for researchers to explore. All of these interfaces—as I have suggested with my three examples in this dissertation—influence games and dictate important elements of digital gameplay.

One key example of a group of periludic interfaces that require greater study is the variety of microtransactional storefronts in games. Microtransactions are the purchase of additional game content or features after the initial acquisition of a digital game. Players may use microtransactions to purchase practical in-game items such as equipment or bonuses, or cosmetic elements such as alternative aesthetics for characters. Some games offer microtransactions in the form of direct purchases, some offer some variations on a form of "loot box" that randomizes the items received within a pool of rewards for a set price, and some offer a combination of these two options. Depending on the game, players may make microtransactional purchases with real-world currencies or in-game currencies—which players may need to purchase with real-world money or acquire over time in-game.

In recent years, games have become increasingly funded by these post-acquisition sales. The Electronic Software Association claims that 49% of all players purchased at least one microtransaction in 2018 (ESA 2019).

During my interviews, I spoke to two individuals who had previously worked in mobile game development, where microtransactions are perhaps the most pervasive. When asked about how they see the role of interfaces more commonly placed in the domain of usability or UI/UX within the process of game design, each of these designers quickly went to discussing microtransaction storefronts. Both spoke to how integral the design of these storefronts were to game design in their experiences with mobile, "free-to-play" games. One even quipped, "of course [the game I was working on] had micro-transactions, [it was] free-to-play." The apparent irony of this quote reiterates a shift in the industry. Well-known free-to-play games Fortnite and League of Legends have each made between one and three billion *per* year the last several years (Martinello 2020; Russell 2018; Statistica Research 2021; Stephen 2020).

Above I mentioned how seven of my interviewees described UI/UX Usability integration happening in the latter cycles of development. None of those seven worked on games with microtransactions. With the rise of free-to-play and microtransactional economic models, the interfaces that support them become increasingly integral to game and game software design. When I asked the two interviewees who had worked in this space where development of storefront interfaces fell in the design process compared to core gameplay mechanics or narrative development, one said, storefront design starts early because "if they don't grow together they don't really fit together." Although establishing core gameplay still comes first, the storefront becomes a priority immediately after and throughout the development process. One of these interviewees described how once a core gameplay concept was established, their goal became to create an experience players "will tolerate [enough to] to allow [the publisher] to make money." This company understood, as I quoted another interviewee above, that players will not come for the menus—or storefront. However, this publisher needed players to stay for them.

Microtransactions are one of the most powerful examples of an interface that functions to obscure the line between what is or is not game. In some games, microtransactions may permit players to spend real-life resources to speed up in-game processes or permit additional access to functions that may otherwise have limited uses.

Both of the interviewees who worked in this space spoke to the precarious balance between gameplay and storefront in player experience. One interviewee described "surfacing," or making visible, the storefront only at strategic times in a way that reflected a complex vision of game design that includes what occurs above *and* below the surface, or in and out of gameplay. Surfacing suggests an awareness of that which is already at or on the surface—that which is already *in play*—and that which is beneath the surface, hidden from view or *apparent* influence. Surfacing is a powerful emic concept that works in tandem with *periludic* to help game researchers consider how media infrastructures are *made visible* to players or made to matter as a part of the game design process and player experience.

STS scholar Nicole Starosielski has used "surfacing" to critically consider how infrastructures that support our everyday technology use often occur beneath our direct experience, or the narratives that shape our understanding of these technologies (2015). Starosielski examines undersea cables and networks that are beneath the surface (n.) of the ocean and surface (v.) at specific terrestrial points, and how these points often have or create meaning. She describes how the companies that maintain these cables practice various "strategies of insulation" to make potentially "turbulent" transitions from surface to undersea and back again as "friction-free" as possible (Starosielski 2015, 17).

Periludic interfaces serve to reduce the friction of transition in or out of gameplay at points that might otherwise be turbulent, or at least, where players may be more or less successfully engaged. Although my interviewee only made it explicit for microtransactional interfaces, it becomes important for researchers to recognize that publishers are careful about how, when, and where periludic interfaces that support gameplay surface, or are made seen.

Surfacing bridges compartmentalized components of game software. Surfacing dictates when systems that support or surround gameplay invade, impede, or enhance gameplay and are seen or summoned within player experience. Surfacing circles back to how a periludic lens impacts players because it describes the act of making them aware of interfaces and systems that influence their experience, the publisher's priorities, or both.

Starosielski describes "strategies of interconnection" as well, which can work alongside, against, or independently of "strategies of insulation" (2015). Where strategies of insulation work to reduce external interference, strategies of interconnection develop structures and practices that allow or create influence between undersea networks and local influences at a surfacing point. If I apply strategies of insulation to describe how periludic interfaces may usher players into games as smoothly as possible, I use strategies of interconnection describes how periludic interfaces enroll players in broader relationships between publishers, technology, and—through microtransactions—financial resources when these interfaces are *surfaced.*

I only observed a complex view of game design that included this idea of surfacing with the two interviewees that had worked on mobile free-to-play games. This approach that balances strategies of insulation and interconnection may for now be more developed in companies that produce games with microtransactions. However, that some publishers are increasingly aware of how essential non-gameplay centered interfaces can be to games and game design is still important for researchers to note.

A periludic lens helps researchers interrogate technologies, systems, and activities that are as much a part of contemporary digital gaming as gameplay and helps them keep pace with shifts in an industry such as microtransactions that arise from non-traditionally observed components of the broader phenomena of gaming. *Periludic* makes room in games research to foreground storefronts, authentication, character configuration, controllers, and more.

In my most immediate future work, will evolve some of the analysis in this dissertation into design-based interventions at the site of character configuration and controllers. In both cases, I plan to conduct iterative research through design projects with members of diverse communities to critically interpret alternative modes of interaction. With character configuration, I will collaborate with demographically diverse players to create character configuration interfaces that center racial and gendered characteristics that my data shows are often excluded. With controllers, I will collaborate with players with a variety of physiological lacks and excesses to critically reconfigure what accessible-by-default controllers might look like.

For researchers who wish to observe, interrogate and intervene on issues of exclusion and accessibility in games, a periludic lens helps to precisely identify sites of inquiry and action. Researchers can use *periludic* to identify and chart relationships that contribute to broader themes of inequality in games, such as those addressed in earlier chapters and above, by foregrounding the interfaces that enable, maintain, or enforce these relationships. A periludic lens augments the study of privacy, representation, and accessibility in games by encouraging researchers to look *around* games in greater detail.

7.5. Summary

A periludic lens fundamentally redefines the relationships players have with games in legal, performative, physical, psycho-social, and financial terms. It acknowledges how integral to gameplay non-gameplay related elements of digital games and game software can be.

The more players conform to the assumed default for whom designers create these interfaces, the less likely these interfaces are to function as a barrier in some way, and the more immediate their gameplay experience likely will be. A periludic lens can help players who easily participate in gameplay as an everyday activity become refamiliarized with interfaces that might have faded from everyday attention. For players who struggle to reach immediacy either because of a lack of skill or because of some lack or excess of physiological capacity, *periludic* provides alternative means of communicating with those who—by design—are unfamiliar with or no longer familiar with that struggle. For those who are learning to participate in gameplay or creative epitextual productions, a periludic lens can help organize and articulate questions, concerns, and critique.

A periludic lens helps designers be more aware of the breath of their influence. This lens highlights how peripheral components of game software affect their designs and emphasizes the importance of too often under-appreciated sectors of the industry.

A periludic lens helps researchers to mitigate the immediacy of gameplay that can often inflect their analysis. This lens can help to mitigate the intent of UI/UX and usability designers who, for better *and* worse, make ensuring their work goes as unnoticed as possible by players their goal. In my own work, this lens has invited new ways of involving players and participants in the generation of knowledge about inclusion and accessibility in games, highlighted new elements of games to study such as microtransactions, and suggested analyzing broader peri-operative interfaces and systems across digital media.

For players, designers, and researchers who wish to better understand the complexities of digital gameplay—and/or who wish to make games more inclusive and accessible—a periludic lens becomes an important tool for locating, articulating, and unifying critiques and constructive intervention. A periludic lens helps hold publishers accountable for the outcomes they produce while providing a clear roadmap for making their games *better,* in both the senses that they are more generally effective and more responsive to the needs of players and broader critical social demands.

Chapter 8.

Conclusion

In this dissertation I examine several ways that periludic interfaces influence games, gameplay, game design, and game research. In chapters one and two, I describe how—even if it is *possible* to read texts independently—peritexts augment them and improve the activity of reading. In chapter two, however, I emphasize how peritexts and periludic interfaces cannot function independently. Peritexts without a text and periludic interfaces without the *ludic* are incomplete. Their value as subjects of study arises from the relationships they have or define with games. Derrida argued that the parergon, the peripheral, the frame, only realize their purpose as they disappear from our attention (1979). I would restate this analysis as these elements only realize their purpose as they successfully *connect* an individual to the ergon, the work, the text, the game. A periludic lens helps players, designers, and researchers to better understand these connections and the relationships that develop as a result. Or conversely, a periludic lens helps players, designers, and researchers to better understand where, how, and why these connections and relationships are challenged or fail to develop.

A periludic lens is a tool that improves and complements rather than replaces the variety of current approaches to games. In the previous chapter, I argue that a periludic lens redefines various relationships we have with games. However, rather than introducing new methods, I urge reframing familiar methods within new contexts. Researchers do not need to apply periludic directly or shift their work to study periludic elements of games for a periludic lens to be helpful. Instead, it can help to sharpen other tools with which games researchers are already familiar.

Periludic supports a semantic and practical differentiation between broader peritextual elements in media and peripheral elements attached to games such as those I describe in this dissertation. Although peritext may be applied to similarly functioning elements of any medium where scholars might apply the textual metaphor, I propose this differentiation to emphasize the computational nature of digital games, periludic interfaces, and the ongoing relationships they mediate. When readers revisit a favorite traditional physical book, they need not worry that the publisher has snuck into their home and altered the formatting of tables of contents or swapped a preface in such a way as to affect their ability to access familiar text. When players revisit a favorite game, however, they may find new menu interfaces, settings, or other non-gameplay-centered elements of the game software that they will need to confront to access familiar gameplay. Where peritextual elements of books improve or scaffold our experiences with texts, periludic element of games additionally dictate how we *can* participate in gameplay in even more mundane ways than I have described in previous chapters. For example, where no peritextual elements prevent readers from turning to the last page of a mystery novel to spoil the ending, digital game software ensures we cannot navigate immediately to the last boss upon first accessing a game. Where book-bound peritexts cannot communicate to publishers about ongoing reader activity, periludic interfaces mediate the ongoing, evolving, surveillance of players that enables a suite of data-driven practices that cannot appear in books.

In this dissertation, I position three examples of periludic interfaces on the periphery of gameplay and the critical outcomes they dictate within the intersecting priorities of players, designers, and researchers. I outline my own empirical approaches to studying these examples. I re-apply Genette to games to salvage components of his paratextual analysis that allow us to revisit the role and accountability of publishers in the production of these peripheral elements of digital games. I re-figure Genette's peritext to recognize the computational nature of digital games and provide a lens to better understand the broader phenomena of digital gameplay in its contemporary incarnation. And as I said in the chapter seven, I highlight how a periludic lens helps players, designers, and researchers to better locate, articulate, and unify critiques and better take action to intervene on issues of access and inclusion at the boundaries of digital gameplay.

In *Play Between Worlds,* T.L. Taylor writes that boundaries "can be the place in which definitions become problematized or previously hidden practices are accounted for" (2006, 10). Taylor is "focused on players" and the elements of player experience "not seen as central in the retellings of […] games" (2006, 10). Instead, I point to mechanical and functional peripheral interfaces I would argue remain similarly not central in the retellings of games.

Writing of infrastructure and information systems, Susan Leigh Star describes how important it is to study the "hidden mechanisms subtending those processes more familiar to social scientists" (1999, 377). She continues: "Study a city and neglect its sewers and power supplies (as many have), and you miss essential aspects of distributional justice and planning power (Latour and Hermant 1998). Study an information system and neglect its standards, wires, and settings, and you miss equally essential aspects of aesthetics, justice, and change" (Star 1999, 379).

I suggest a periludic lens to emphasize hidden or obscured mechanisms subtending gameplay processes more familiar to those who play, make, and study games. A periludic lens brings into focus elements of digital gameplay that support—yet are no less essential than—more common subjects of games research. A periludic lens highlights how relational and ecological these too often neglected elements of games can be, and how attending to them can provide essential precision and context to the questions we ask about our player and gameplay experiences, and how many broader issues connect to games. Study games, and neglect their authentication processes and distribution platforms, character selection and creation, or means of physical navigation and you miss equally essential aspects of privacy and ownership, surveillance, diversity and inclusion, accessibility, expertise, fluency, and governance.

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Appendix A.

Games sample - Ludography

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Appendix B.

Controllers

All controllers ordered by year, with platform, subcategory and a basic description as most do not have specific names. Images of all controllers are not available at this time.

#	Year of Release	Platform	Stationary/ Handheld/ Versatile	Basic Controller description
1	1972	Magnavox Odyssey	Stationary	Box-like with two dials and buttons.
2	1977	Atari 2600	Stationary	Track ball in a large rectangle with buttons
3		Atari 2600	Stationary	Single joystick with button
4		Atari 2600	Stationary	Two pieces, each with dials and buttons
5		Atari 2600	Stationary	Single joystick with button and dial
6		Atari 2600	Stationary	Single joystick with a button
7		Atari 2600	Stationary	Single joystick/flight stick with button and trigger, and other buttons

8		Atari 2600	Stationary	Single joystick/flight stick with button and trigger and buttons
9		Atari 2600	Stationary	Single joystick with button
10		Atari 2600	Stationary	Single joystick with buttons
11		Atari 2600	Stationary	Single joystick with button
12		AtariC-380	Stationary	Large rectangle with mix of dials and buttons
13		DMS TeleAction	Stationary	Two pieces, each with mixture of buttons and dials
14	1978	APFM1000	Stationary	Two pieces, each with dial and button pad
15		Atari 2600	Stationary	Buttons in number pad
16		Magnavox Odyssey 2	Stationary	Single joystick and buttons
17		Magnavox Odyssey 2	Stationary	Array of buttons on a central piece, with two pieces, each with a stick and a button

18		Mattel Handheld – Battlestar Galactica	Handheld	Small rectangle with central button and scaled display
19		Mattel Handheld – Basketball	Handheld	Small rectangle with a small screen and buttons, and d-pad
20		Mattel Handheld – Battle Armor	Handheld	Small rectangle with screen with topographic impression, and buttons, and d-pad
21	1980	Intellivision	Stationary	Two pieces, each with dial and button pad
22	1981	Mattel Handheld – Dungeons & Dragons	Handheld	Small rectangle with offset screen and buttons.
23		Tandy Baseball	Handheld	Central baseball field display with buttons below.
24	1982	Atari 1200XL	Stationary	Full keyboard with additional buttons along the top
25		Atari 2600	Stationary	Blank numberpad
26		Atari 5200	Stationary	Central track ball, with two number pads and

				other buttons to either side
27		Atari 5200	Stationary	Number pad, stick and buttons
28		Coleco	Stationary	Central trackball with buttons to either side.
29		Coleco	Stationary	Steering wheel with attached piece with stick and number pad
30		Coleco	Stationary	Stick and number pad
31		Commodore 64	Stationary	Full keyboard
32		Nintendo Game & Watch – Donkey Kong	Handheld	Fold-able rectangle with a screen on top and bottom, with d-pad and buttons.
33		Vectrex	Stationary	One stick with buttons
34	1983	Atari 2600	Stationary	Larger piece with central track ball with buttons on either side
35		Atari 2600	Stationary	Single stick with buttons
36		Atari 2600	Stationary	Full number pad

37		Atari 2600	Stationary	Single track ball with button
38		Atari 2600	Stationary	Single joystick/flightstick with buttons
39		Atari 600XL	Stationary	Full Keyboard
40		Bentley Compu-Vision	Stationary	Central piece with buttons and two smaller pieces, each with a stick
41		Coleco	Stationary	Handle grip with number pad and single stick
42		Coleco Gemini	Stationary	Small rectangle with single stick and dial
43		Intellivision 2	Stationary	Number pad with d-pad
44		Intellivision 2	Stationary	Keyboard
45		Intellivision 2	Stationary	Piano keyboard
46		Nintendo Game & Watch – Donkey Kong II	Handheld	Fold-able rectangle with a screen on top and bottom, with d-pad and buttons.
47		Nintendo Game & Watch – Lifeboat	Handheld	Fold-able rectangle with a screen on left and right, with buttons on each side

48	1985	Nintendo Entertainment System (NES)	Stationary	Rectangle with D-pad and buttons
49		NES	Stationary	Gun shaped with trigger
50	1986	Atari 7800	Stationary	Central stick with buttons on either side
51		Sega Master	Stationary	Rectangle with D-pad and buttons
52		Sega Master	Stationary	Gun shaped with trigger
53	1988	NES	Stationary	Floor pad with dots for inputs
54	1989	NEC PC Engine	Stationary	Rectangle with D-pad and buttons
55		NES	Stationary	Power Glove
56		NES	Stationary	Folding Flat with IR sensors
57		Nintendo Game Boy	Handheld	Rectangle with screen, d-pad, and buttons
58		Sega Genesis	Stationary	Cresent shaped with d-pad and buttons
59	1990	NEC TurboExpress	Versatile	Rectangle with screen, d-pad, and buttons

60		Sega GameGear	Handheld	Rectangle with central screen and d-pad and buttons to either side
61		Sega Genesis	Stationary	Arcade style, with stick and buttons.
62	1991	Atari Lynx	Handheld	Rectangle with central screen and d-pad and buttons to either side
63		Super Nintendo Entertainment System (SNES)	Stationary	Nearly flat barbell shaped with d-pad and buttons
64	1993	Atari Jaguar	Stationary	Squarish with D-pad, number pad, and additional buttons
65		Commodore Amiga CD32	Stationary	Boomerang with d-pad and buttons
66		Sega Genesis	Stationary	Cresent shaped with d-pad, buttons, and shoulder buttons
67	1994	Windows PC	Stationary	Joystick/flightstick with buttons and trigger
68		Sony PlayStation	Stationary	Boomerang with d-pad, buttons, and shoulder buttons

69	1995	Nintendo Virtual Boy	Stationary	Square-ish boomerang with two d-pads and buttons
70		Nintendo Virtual Boy	Stationary	Square-ish boomerang with two d-pads and buttons, and power cord.
71		Sega Nomad	Versatile	Rectangle with central screen and d-pad and buttons to either side
72		Sega Saturn	Stationary	Cresent shaped with d-pad, buttons, and shoulder buttons
73		Sega Saturn	Stationary	Gun Shaped with Trigger and extra button
74	1996	Nintendo 64 (N64)	Stationary	Upside-down trident with stick in center, d-pad to left, and buttons to right; Shoulder buttons and trigger
75		Nintendo 64 (N64)	Stationary	Off-brand version. Upside-down trident with stick in center, d-pad to left, and more buttons to left and right; Shoulder buttons and trigger

76		Nintendo 64 (N64)	Stationary	Off-brand. Upside-down trident with stick in center, d-pad to left, and buttons to right; Shoulder buttons and trigger
77		Panasonic 3DO	Stationary	Rounded rectangle with d-pad and buttons.
78		Sega Saturn	Stationary	Round with handles, a stick, d-pad, buttons, and triggers
79	1997	Sony PlayStation	Stationary	Boomerang with d-pad, buttons, and shoulder buttons, and two sticks in the center
80		Tiger Game.Com	Handheld	Rectangle with central touch screen and d-pad and buttons to either side, with stylus in lower center
81	1998	NeoGeo Pocket	Handheld	Rectangle with central screen and d-pad and buttons to either side
82		Nintendo Game Boy Color	Handheld	Rectangle with screen, d-pad, and buttons

83	1999	Sega Dreamcast	Stationary	Stick, d-pad, and buttons, and an emptyhole that opens to memory+ ports
84		Sega Dreamcast w/VMU	Stationary	Stick, d-pad, and buttons, and a screen in the center from plugged in VMU
85		Sega Dreamcast – just VMU	Versatile	Screen, d-pad, and buttons, and plug to be inserted into controller
86		Sega Dreamcast	Stationary	Steering wheel with buttons and separate pedals
87		Sega Dreamcast	Stationary	Mouse and full keyboard
88		Sega Dreamcast	Stationary	Fishing rod with buttons, d-pad, and reel
89	2000	Sega Dreamcast	Stationary	Gun-shaped with trigger and buttons, and a hole above the grip down to a memory+ port
90		Sega Dreamcast	Stationary	Gun-shaped with trigger and buttons, and a screen in the center from plugged in VMU

91		Sony Playstation 2 (PS2)	Stationary	Boomerang with d-pad, buttons, and shoulder buttons, and two sticks in the center
92	2001	Nintendo GameCube	Stationary	Two sticks, d-pad, buttons, shoulder buttons and triggers
93		Nintendo GameCube	Stationary	Two sticks, d-pad, buttons, shoulder buttons and triggers, but wireless
94		Nintendo Game Boy Advance (GBA)	Handheld	Central screen with d-pad and buttons to each side
95		Sega Dreamcast	Stationary	Off-brand gun-shaped with trigger and buttons, and a hole above the grip down to a memory+ port
96		Sega Dreamcast	Stationary	Gun-shaped with trigger and buttons, and a screen in the center from plugged in VMU
97		Microsoft Xbox	Stationary	Roundish with two sticks, d-pads, buttons, and triggers.
98	2002	Microsoft	Stationary	Smaller scale version of previous, with two

				sticks, d-pads, buttons, and triggers
99	2003	N-GAGE	Handheld	Horizontal cellphone with screen in center with d-pad, buttons, and number pad
100		Nintendo GBA SP	Handheld	Foldable with screen on the top and d-pad and buttons on bottom.
101		Windows PC	Stationary	Boomerang with d-pad, buttons, and shoulder buttons, and two sticks in the center
102	2004	Nintendo Dual Screen (DS)	Handheld	Foldable with a screen in the center of top and bottom, the lower being a touch screen, with a d-pad and buttons on either side
103		Sony PlayStation Portable (PSP)	Handheld	Roundish rectangle with screen in center with d-pad, stick, and buttons on either side.
104		PS2	Stationary	Sword hilt with sticks, d-pads and buttons.
105	2005	Microsoft Xbox 360	Stationary	Two sticks, d-pad, buttons, shoulder

				buttons, and triggers; wireless
106		Microsoft Xbox 360	Stationary	Two sticks, d-pad, buttons, shoulder buttons, and triggers; wired
107		Nintendo GBA SP	Versatile	Foldable with screen on the top and d-pad and buttons on bottom.
108		Nintendo Game Boy Micro	Handheld	Screen with d-pad and buttons on either side
109		Nintendo GameCube	Stationary	Floor pad with arrows and impact-based inputs
110	2006	Nintendo Wii	Stationary	Oblong with d-pad, buttons and trigger
111		Nintendo Wii	Stationary	Oblong with d-pad, buttons and trigger, and additional motion enhancement
112		Nintendo Wii	Stationary	Oblong with d-pad, buttons and trigger, and extra piece with stick and additional shoulder button

113		Nintendo Wii	Stationary	Two sticks, d-pad, buttons, and shoulder buttons
114		Playstation 3 (PS3)	Stationary	Boomerang with d-pad, buttons, and shoulder buttons, and two sticks in the center, wireless
115	2007	Microsoft Xbox 360	Stationary	Oblong with buttons
116		Microsoft Xbox 360	Stationary	Guitar Controller
117		Microsoft Xbox 360	Stationary	Drum Kit controller
118		Nintendo Wii	Stationary	Plastic board
119	2009	Nintendo Wii	Stationary	Skateboard controller
120	2010	Microsoft Xbox 360	Stationary	Rectangular with camera and IR sensor
121		PS3	Stationary	Oblong with stick, buttons, and trigger; wireless
122	2011	Nintendo 3DS	Handheld	Foldable with a screen in the center of top and bottom, the lower being a touch screen, with a d-pad and buttons on either side

123		Sony PlayStation Vita	Handheld	Roundish rectangle with screen in center with two d-pads, stick, and buttons on either side
124	2012	Nintendo WiiU	Stationary	Two sticks, d-pad, buttons, shoulder buttons, and trigger
125		Nintendo WiiU	Versatile	Screen in center, with two sticks, d-pad, and buttons around it
126	2013	Microsoft Xbox One	Stationary	Two sticks, d-pad, buttons, shoulder buttons, and triggers; wireless
127		Ouya	Stationary	Two sticks, d-pad, buttons, and shoulder buttons; wireless
128		Sony Playstation 4 (PS4)	Stationary	Boomerang with d-pad, buttons, and shoulder buttons, and two sticks in the center and touch pad in upper center, wireless
129	2015	Microsoft Xbox One	Stationary	Two sticks, d-pad, buttons, shoulder buttons, and triggers; wireless

130	2017	Nintendo Switch	Handheld	Screen in center with two sticks, d-pad, and buttons to either side
131		Nintendo Switch	Versatile	Two sides of previous on their own, used together wirelessly. Two sticks, d-pad, buttons, shoulder and triggers.
132		Nintendo Switch	Versatile	Two sides of previous on their own, used together while socketed into handheld holder that comes with platform. Two sticks, d-pad, buttons, shoulder buttons
133		Nintendo Switch	Versatile	Left half of previous controllers used on its own. One stick, one d-pad that may function as buttons, usable shoulder buttons and un-usable shoulder buttons.
134		Nintendo Switch	Versatile	Right half of previous controllers used on its own. One stick, one set of buttons that may function as a d-pad, usable shoulder buttons

				and un-usable shoulder buttons
135	2018	Nintendo Switch	Stationary	GameCube controller for Switch; Two sticks, d-pad, buttons, shoulder buttons, and triggers.
136		Nintendo Switch	Stationary	Different version of GameCube controller for Switch; Two sticks, d-pad, buttons, shoulder buttons, and triggers.

Appendix C.

Controller Timeline Chart