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"You Must Defeat [The Tutorial] To Stand a Chance": Learning To Play Competitive Fighting Video Games

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Thesis of Aidan D. Rivas

Submitted in Partial Fulfillment of the Requirements for the Degree of

Master of Arts Composition, Rhetoric, and Digital Media

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Halmos College of Arts and Sciences

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"YOU MUST DEFEAT [THE TUTORIAL] TO STAND A CHANCE": LEARNING TO PLAY
COMPETITIVE FIGHTING VIDEO GAMES

A Thesis

Submitted in Partial Fulfillment of the

Requirements for the Degree

Master of Arts in Composition, Rhetoric, and Digital Media

Aidan Rivas

Halmos College of Arts and Sciences

Department of Communication, Media, and the Arts

Nova Southeastern University

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ABSTRACT

Modern competitive video games are complex systems that require players to learn techniques and develop strategies in response to computer- or human-controlled opponents. Building on the work of both game studies scholars and game designers, this thesis analyzes various learning spaces within and surrounding competitive video games, including in-game tutorials, arcades, and online communities. It focuses on “fighting games,” those competitive video games in which, typically, two players control characters to face off in single combat. Through analysis of the interfaces used, the audio-visual artifacts present within the tutorial sections of fighting games, and the paratextual materials produced by members of the fighting game community to instruct others on how to play, this thesis highlights the learning principles active within this genre of video games.

Keywords: Usability, Learnability, Tutorial, Learning, Emergent Behavior, Heuristics, Play

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INTRODUCTION

When I was a child, I remember holding the controller of a SEGA Genesis console with *Mortal Kombat 2* (1993) flickering on the cathode-ray tube television before me. The arguably ill-advised choice to place me, a four-year-old at the time, in front of the hyper-violent spectacle that is *Mortal Kombat* set me on a path to become an adult with hobbies remarkably similar to that of my four-year-old self, albeit with far more vested interest in video games as more than simply toys to pass the time. For me, video games are a form of interactive media that promote a unique form of meaning making through complex systems, an idea many scholars (like Mary Flanagan, Miguel Sicart, Jesper Juul, or Ian Bogost) have established across their writing. Video games possess global cultural importance, industry sophistication, and vital economic impacts. They also invite consumers to interact with their content to embed themselves in their worlds across numerous genres, creating stimulating fictional spaces for players to engage with stories and communities in exciting ways. The nature of the meaning making that games foster is a common topic within game studies, as is highlighted by Juul (2011):

When we are theorizing about games, it can seem that games contain a built-in contradiction: Since play is normally assumed to be a free-form activity devoid of constraints, it appears illogical that we would choose to limit our options by playing games with fixed rules. Why be limited when we can be free? The answer to this is basically that games provide context for actions: moving an avatar is much more meaningful in a game environment than in an empty space; throwing a ball has more

interesting implications on the playing field than off the playing field; a rush attack is only possible if there are rules specifying how attacks work; winning the game requires that the winning condition has been specified; without rules in chess, there are no checkmates, end games, or Sicilian openings. The rules of a game add meaning and enable actions by setting up differences between potential moves and events. (p. 38)

In this thesis, I am similarly interested in how meaning-making within game spaces is built around the shifting event potential as players learn the rules of the game in relation to other players. Sicart (2015), like Juul, distinguishes "play" from "games," considering games to be manifestations of play that sometimes eclipse our understanding of play itself. As he writes, "like in the old fable, we are the fools looking at the finger when someone points at the moon. Games are the finger; play is the moon" (p. 2). Seeing video games as digital spaces for play, rather than solely as entertainment media, is critical to understanding where and how learning is facilitated within them. Recently, widespread academic interest in video games has been fueled by their relevance to discussions in education, technology and design industries, and popular culture focusing on topics ranging from economics, psychology, design, health, to communication. Despite the assumption that video games do not contain or transmit content, it is unsurprising to find out, instead, that educators have found ways to use games such as *Portal* to teach physics, to use *Minecraft* to teach coding, and to use *Age of Empires* to teach history. But content is not the primary reason to be interested in what Kurt Squire (2006) called the "designed experiences" that games bring into our lives. Central to the design of this experience, Juul (2011) claims, are the relations between content and game rules, as well as the relations between the game's rules and

its aesthetic representation (p. 28-33). The video games that are the focus of my study serve as premier sites for observing these relations.

My primary focus in this thesis is the genre of video games known as “fighting games,” games in which, typically, two players face off in single combat, controlling characters with specific skill sets, but using a limited set of joystick and button-based controls built into the controller interface. Popular examples of fighting video games are the *Street Fighter*, *Mortal Kombat*, and *King of Fighters* series, each having been in circulation since the late 1990s. I find games in the fighting genre to be fundamentally interesting—not because they fit well into niches carved out by other game genres, but because they do not. These games are competitive brawling simulators, spaces for storytelling and worldbuilding, and simulations of the specific real-world context of public arcades; they contain features present in other video games, but cannot be defined by any one aspect.

Fighting games ask that players experience growth and learning primarily through competition with other human players who also interact within the same digital environment towards the goals outlined by a simple ruleset. There must always be a winner, and always a loser—save for the rare situations where two players knock each other out at the exact same time, resulting in a draw or “Double K.O.” All scenarios result in learning. My thesis asks: how do players learn to play fighting games and how are they designed to facilitate this learning? Specifically, this thesis seeks to better understand the design and value of the embedded learning

materials within the games and those created by the communities surrounding the genre of video games known as “fighting games.”

Below, I analyze the physical and virtual contexts of learning within and surrounding fighting games, including their interfaces and communities, focusing on the audio-visual artifacts present within the tutorial sections of fighting games, as well as on those paratextual materials produced by members of the fighting game community to instruct others on how to play. Scholars like Davis and Eyman (2016) examine writing and rhetorical activity in and around games as interactions between players and the games they play as well as between players themselves. Players share and interact with others in the gaming community through avenues like forums, documentation of games, transmedia storytelling, and walkthroughs to assist other players. As an active participant of these communities, I draw on my own experience learning how to play fighting games. To understand how learning is facilitated by the rhetorical choices made in the creation of player-made tutorial materials, I intend to analyze the conventions they share with one another, the genres they embody, the value they provide to community members, and the behaviors and skills they reinforce. Through this, I hope to continue to unearth what video games have to teach us about learning.

LEARNING IN GAMES TO ACADEMICS

Academic interest in video games encompasses a broad range of topics, especially since games are not a single genre that shares limited conventions, but a range of genres that can incorporate content and conventions from many other discourses and genres. For instance, a calm, sunny farming simulator based on real-world Earth physics can exist next to a dark, horror-inspired sci-fi campaign set in unexplored space—both with the equal claim to being video games. Video games that simulate professional sports, with all their rules, brand name sponsorships, and even selectable avatars representing current iconic players like LeBron James are released yearly to worldwide acclaim. Scholars can bring specialized concerns about the environment, about identity, about graphic design, about business ethics, or about any other discourse to bear on video games in which these activities are reflected or engaged in. In this thesis, I will focus on a few key texts and conversations that illuminate the ways in which gamers and game designers think about how to help gamers learn within game ecologies.

James Paul Gee laid a foundation for examining learning in video games in 2003 with *What Video Games Have to Teach Us About Learning and Literacy*. Within this book, Gee recounts his experiences with learning to play video games from his perspective as a researcher of literacy and linguistics. He asks “how, in heaven’s name, do they sell many of these games when they are so long and hard?” It is a fair question considering that video games are not the cheapest hobby, often costing over \$50 for a single game. What makes the investment worth it? Rather than finding the difficulty of games discouraging, it instead inspired further questions from Gee (2003):

It brought back home to me, forcefully, that learning is or should be both frustrating and life enhancing. The key is finding ways to make hard things life enhancing so that people keep going and don't fall back on learning and thinking only what is simple and easy. (p. 6).

With this mindset, Gee outlines 36 principles of ideal learning by the end of his writing that he found to be present in video games (Gee's principles are discussed throughout his book but collected within the Appendix of *What Video Games Have to Teach Us About Learning and Literacy* for ease of access). These learning principles were gathered by playing genres other than fighting games, with the only mention in the book of a fighting game being *Mortal Kombat*. Even then, it was merely a brief example of an exceptionally violent game in response to the discourse around violence in video games. Gee predominantly discusses playing single-player experiences like Nintendo's *Pikmin* (2001), Square Enix's *Deus Ex* (2000), and Valve's *Half-Life* (1998). These games are fundamentally different from fighting games, and throughout *What Video Games Have to Teach Us About Learning and Literacy*, Gee rarely explores the domains of multiplayer or competitive genres of video games.

That is not to say he does not mention video game communities, though. He delves into how communities form around video games more generally, and the metrics he defines are useful for illustrating how an ecology of learning has formed around the tight-knit culture of fighting games. Most prominent to me is the discussion of semiotic domains—spaces in which those who are members of a particular affinity group build their literacy of a particular subject. By Gee's breakdown, to be considered literate

...requires more than being able to ‘decode’, and because it requires people to be able to participate in—or at least understand—certain types of social practices, we need to focus on not just ‘codes’ or ‘representations’ but the domains in which these codes or representations are used, as well. (p. 18)

To be a member of a semiotic domain is to engage with and understand a specific set of social values, behaviors, and thought processes. Gee also maintains that any given semiotic domain does not necessarily exist independently of any other and can often be divided into subtypes. A “gamer” and a “fighting game player” are not mutually exclusive. However, as a sub-type of gaming, fighting game players are more likely to understand general behaviors and values of gaming than one could expect a general gamer to understand fighting games at first glance.

Classifying these domains as Gee does provides a foundation for understanding what he describes as “an alternate perspective on learning and knowing” presented as counter to the “problem of content,” which describes the criticisms video games receive based on their lack of content that relates to “intellectual domains or academic disciplines like physics, history, art, or literature” (p. 23). Semiotic domains allow for forefronting the specific skills or information learned regardless of the content, as it becomes possible to acknowledge the lateral application of concepts learned in one domain to any other applicable area of knowledge where that skill is useful. Within the domain of the fighting game community, we see this sort of lateral application of knowledge from other gaming-focused domains frequently and can use this framework—along with Gee’s learning principles—to concisely describe and understand video games and

their communities as spaces for learning. These learning principles and their applicability to fighting games will be explored later in the thesis.

The use of the term “ecology” is appropriate in this context as the communities formed by gamers largely include people willing to create and share information with each other, often painstakingly collected through play. This information can vary from a simple screenshot from a video game presented without comment, to a publicly available 107-page doctoral dissertation analyzing the plot of an action-adventure video game (“Redgrave,” 2015). Julia Mason (2013) brings attention to the phenomena of gamers engaging in acts of professional communication as part of their activity in a community of gamers, affirming that “being a successful gamer requires both thinking and acting as a technical communicator” (p. 220). It is rare for a person to engage with video games without passively absorbing information that is necessary to understand how to play them, but gaining and sharing applicable knowledge, and understanding the value of that information within a specific group requires deeper engagement, as well as spaces wherein people discuss, share, or show off their newfound expertise. In this context, the physical act of playing a game is only one part of being a member of a gaming community. When looking at video games from the perspective of a technical communicator (an activity that Mason argues is prompted by games themselves), learning within video game spaces serves as one’s authority for claiming expertise within interlocking semiotic domains.

A connection between learning and technical communication is central to the semiotic domains formed around video games. Mason draws this connection by referencing Flower, Hayes, and Swarts’ 1983 work on readers’ engagement with functional documents that focus on

a “human agent performing actions in a particularized situation” (cited in Mason, 2013, p. 226). Mason then observes that “readers of technical genres are thus assumed to read primarily for the purpose of enabling a specific action. After all, few people peruse a phonebook for fun” (p. 226). But video game manuals and related repositories and media *are* technical genres through which gamers can learn with the ultimate goal of enabling fun. And video games themselves are multimodal texts which are filled with as much textual content as visual or aural, making reading and understanding said content a significant portion of the time spent playing them.

Every player who both engages with video games and participates in social circles to discuss them is likely taking part in acts of (technical) communication. But what kind of information circulates in such spaces related to competitive fighting games? In my experience, members of the Fighting Game Community (colloquially known as the FGC) typically learn, gather, and share technical data related to the underlying calculations and mechanics that are hard-coded into the game engine, and which are not typically available directly from the game interface. Such resources might answer questions such as: “How much time does an attack take to make contact with an enemy?”; “For how much time is the attack threatening?”; or “At which screen position is the attack most effective?” Of course, as the intricate systems behind video games needed to be designed by people, the answers to these questions have numerical values that can be measured or pulled from the game’s files with third-party software. These can be simply documented, or recontextualized as supplemental learning materials for other players. In the FGC (a global community where fighting games are played competitively both online and in offline local spaces), many players create technical documents to assist their fellow players in

learning the games they are passionate about, even making efforts to learn and use specific notation systems that are part of this community's semiotic domain so that these paratextual supplements can be understood across language barriers.

Similarly to Mason, Ian Bogost draws a parallel between the documents drafted by fans of video games and those drafted by the writers of online storefront reviews in his book *How to Talk About Videogames*. Like household products, Bogost (2015) writes, we “think they are appliances, mere tools that exist to entertain or distract [...], their ability to satisfy our need for leisure is their only function” (p. ix), yet still there are those who dedicate large-scale effort to delivering consumers a cohesive report of every relevant detail one could possibly want to know about a given product, much more than is required to simply use the product. That type of effort, used for deliberate technical communication, implies a very real commitment on the part of players to understand the underlying technologies and systems through which video games are created and experienced. The resulting insights find homes in a variety of player-managed repositories of data such as wikis, social media platforms, and forum/bloggging websites. Bogost also maintains that games—including non-technological games, like board games and traditional sports—have a uniqueness as devices designed for people to operate them. He describes them as “gross, revolting heaps of arbitrary anguish” that are, more often than not, filled to the brim with more mundane activities to complete than entertaining ones. Bogost illustrates here what it is about that mundanity and the frustrating nature of games that makes them charming. While it may sound like a negative view of games, Bogost uses this language to emphasize a beauty in the emergent behavior that results from the creativity of users and players. Such emergent behavior

is central to learning fighting games, prompting the existence of paratexts like *The Fighting Game Glossary* (Pusch, 2021), a website that features terminology (with examples and translations) gathered and archived over decades of use in the FGC.

So, how can we enjoy games that seem to involve so much work to play, understand, or master? Bogost identifies games like the board game *Sorry!* and the classic game *Tetris* as prime examples of simplistic yet frustrating titles that had a large user base. In other words, what we enjoy about games is not simply our ability to complete or master them, but the process of attempting to win them through experimenting with different strategies. Reflecting on his experiences playing *Flappy Bird*, for example, he said “the games we find ourselves ever more devoted to are often also the ones that care little for our experience of them” (p. 5). It seems that games that are created as devices for consumers to experiment with, as opposed to set experiences, are often the most successful (or at the least are accessible to the most audiences). If, as Bogost claims, the enjoyment of games is derived from experimentation with operable devices, we may gain some insight into why game designers of fighting games may not lean into common forms of video game learning, or why games in the fighting genre are widely considered difficult to learn.

Another voice in the field of video game discourse is Matthew White, the CEO of indie video game publishing company Whitethorn Digital, with multiple publications from his time as an academic focused on pedagogy, the knowledge of which he now uses working in game development. His 2014 book, *Learn to Play: Designing Tutorials for Video Games*, is a well-articulated guide to video game tutorials and their format, created in large part to act as a

reference for people interested in the field of game development or video game learning. He introduces the book by explaining how humans value categorization from the psychological field's idea of *schema*:

A sparrow is a sort of bird, which is a sort of animal, which is a sort of living thing, and so on. With these schema distinctions, we associate rules. Birds can be fed, for example. The bottom line that we tend to miss is that we had to learn these schemas at some point. Just like game players know that shooters often have a reload button, we know that birds will often fly away when approached. (p. 11)

White introduces the concept of schema to provide a way of thinking about how designers can rely on existing conventions familiar to players to guide design decisions. A similar idea of addressing the ways in which people categorize games within semiotic domains also appears in Gee's (2003) writing as the idea of "design grammars"—a self-described "perverse" term used to define common conventions within a genre that people recognize and form connections with as they build a literacy (p. 33). Design grammars as a term is not limited explicitly to games, but rather refers to a recognizable set of "principles and patterns in terms of which one can recognize what is and is not acceptable or typical content in a semiotic domain" (p. 29). Schema and design grammars are brought up due to the increased commonality of consumers who are familiar with the genre conventions of video games. The claim "Shooting games tend to have a reload button" is a perfect example of a design grammar that a player may expect upon seeing the format of a video game. Games designed with these grammars in mind

provide a strong basis for learning, as players experience less confusion at the beginning stages of learning to play.

Ideas as specific as which button on a controller would *be* the reload button may be within a player's expectations as well. Relevant for the discussion of learning ecologies is the impact that design grammars can have on the social practices of a game's affinity group, and vice versa. As consumers play, review, and discuss games amongst each other, they build a set of values and "best practices" that then rebound back to the designers and subsequently influence future titles. This general recursive nature of product design is readily apparent across fighting games. Each new title takes inspiration from others or attempts to make up for the shortcomings of other titles that were broadcast by members of the affinity group. This is not an exclusive feature of the genre, but perhaps has more clear examples than one might expect.

White's book is rife with advice for those studying, creating, or interested in video games and, more specifically, the tutorials and learning opportunities within them. He analyzes the effectiveness of those types of tutorials, using "a few of the most popular and well-supported theories" of learning as the backbone of his arguments, including Bruce Mann's Attentional Control Theory of Multimedia Learning, Richard Mayer's Cognitive Theory of Multimedia Learning, and John Sweller et al.'s Cognitive Load Theory (p. 39). Each of these theories provides methods for analyzing learning materials by their audio-visual elements and can be applied to games. White argues that the most relevant for games are Attentional Control Theory and Cognitive Theory, which both seek to "break the human mind down into separate sensory components," namely the eyes and ears (p. 42). As video games attempt to teach through

interfaces, these theories look to the senses to argue that it is the repeated use of our senses that allows us to place new information into long-term memory—what White calls “crystallized intelligence” (p. 42). Within my analysis, I will determine how often fighting games prompt multiple senses at once within their learning environments, or in the midst of gameplay to facilitate memory retention.

Continuing with the brain-centric perspective on learning provided by the prior two theories, Cognitive Load Theory also involves looking at the human brain like a computer with a certain amount of usable RAM. In other words, our brains can only handle a finite amount of processes at once. Cognitive Load Theory also divides different types of brain processes by what takes up the brain’s metaphorical RAM, each taking up a variable amount of brainpower. The learning task at hand takes up a chunk of brainpower (endogenous load), any distractions or stimuli unrelated to the task take up some as well (extraneous load), and the “background processes” like keeping information in mind for near future use (germane load) takes up the final chunk. The idea of keeping the mind from overloading while learning a task is described as a balancing act for game designers, one that can make the difference between a game being played or left collecting dust—as is often the case with fighting games. As White states: “We only have so many cognitive resources available for allocation and if we use them all, we get frustrated and stop what we are doing unless our motivation to continue is extremely high. It is safe to say that if a person is a novice gamer, he or she is not going to tolerate much frustration before quitting. After all, games are supposed to be fun” (40). Each of these theories can act as a guide for identifying the limiting factors for new player engagement in fighting games. Attentional Control

Theory and Cognitive Theory of Multimedia learning provide specific elements to look for while analyzing tutorials, and Cognitive Load Theory provides both a benchmark for a sufficiently engaging game and a serviceable explanation for players' disengagement.

As a final topic to cover from *Learn to Play*, White provides a set of three guiding principles for designing more easily learnable games that encourage players to continue playing (and learning) the game. Generally, the principles that a game should embody are as follows:

- (1) Make sure all players are able to reach the same skill level very quickly.
- (2) Reward success and punish failure quickly, harshly, and overtly.
- (3) Do not ignore the wealth of data at your fingertips. (p. 126)

For this thesis, the first two are significantly easier to analyze in relation to existing games and related media. It is not quite possible to jump into the minds of game developers retroactively, but these principles, in conjunction with Gee's principles, should allow for the creation of a heuristic for assessing learning within the genre of fighting games.

While texts like White's look at the practices of developers, other scholars focus on the user's experience. For instance, Regina Bernhaupt's (2015) *Game User Experience Evaluation* is a collection devoted to user experience (UX) evaluation methods. Throughout this book, different authors recognize that it is difficult to generalize something as fluid as "a positive gaming experience" (Calvillo-Gómez et al., p. 43-46); regardless, it is possible to qualitatively record recurring factors in players' perception and relate them to concrete elements of a game to design with those factors in mind. While the book covers multiple possible heuristics for

understanding video games, Bernhaupt's citation of Strauss and Corbin's (1997) Grounded Theory seems especially useful for analyzing the fighting gaming experience. The core elements of the gaming experience are divided into two categories, the video game itself, and "puppetry." The video game is the far more easily definable category of the two, split into two sub-categories called "gameplay" and "environment," which describe "what the game is about, its rules and scenario" and "the way the game is presented to player, the physical implementation into graphics and sounds" (p. 46) respectively. Such concepts provide an approachable way to describe the experience of the player experiencing the game world and remind us that a video game is not just a text to be read, but an experience to be had.

Puppetry is the more esoteric concept, referring to the relationship between the player and the technology they are interfacing with when they play a video game. The terms outlined in this chapter as they relate to UX evaluation (control, ownership, and facilitators) provide identifiable benchmarks for evaluating whether a player has had a positive, negative, or worse, *completely uninteresting* experience. Luckily, like many web-centric communities, fighting game spaces are rife with casual gamers, competitors, talking heads, and media critics who engage with fighting games and share their analyses using social media. Using Twitter and YouTube, we can identify the ideals, values, and goals shared publicly among fighting game players. In short terms, control refers to a player learning to manipulate a game through both abstract concepts like objectives and possible actions slated by the game, and more literally through the physical peripherals they use, like keyboards and mice or controllers (pp. 47-49). Ownership is the process where a player, now in control of the game, adapts the game's goals to their own intentions. Game studies and

rhetoricians often describe this feeling using terms such as identification or agency, but the concept is similar in principle. The game may say to go west, but the player claims ownership of the character, and instead disobeys and travels east, where they may find rewards intentionally left by the developer to encourage exercising their desire to explore the unknown (pp. 49-51). Facilitators are subjective factors that can recolor a player's experience, tinging it as more or less positive based on the individual, and possibly outweighing the other two. A player with a long-standing love for a particular series (previous experiences) and its aesthetic values is more likely to have a positive experience whether they achieve full control of a game or are able to claim ownership (pp. 51-52).

Bernhaupt's model for defining the core elements of "the gaming experience" provides useful tools for assessing the qualitative data within this study. Artifacts like YouTube videos, tweets, and forum posts from disgruntled (or exuberant) fighting game fans can be aligned with the core elements of their gaming experience that led to their opinion—issues of control, ownership, or facilitation, for instance.

What the conversations among these scholars and designers reveal more generally is an acute interest in how people learn to play video games, drawing on everything from communication and design principles to insights from psychology and neurology. Fighting games provide an excellent context in which to observe such learning, especially as this process continues far beyond the tutorial as players need to account for emergent playing styles and technical processes that are not covered in the interfaces of most video games.

CHARACTERIZING FIGHTING GAMES

Play is an important and widely recognized aspect of social and cognitive development that is of particular interest to those who study literacy because, as Lochman (1986) argues, it is a critical tool used to “generate significant associations, imaginative insight, bold expression, and valuable ideas” (p. 14). Modern video games are capable of providing play-oriented environments that support social interaction (e.g. in-game player-to-player coaching systems) that older video games often could not provide with limited technology, even in spaces centered around them. In Sicart’s (2017) terms, modern video games provide a sophisticated playground wherein play is significantly influenced by the virtual environment (p. 50). Academics value video games as artistic texts worthy of analysis (Flanagan, 2009), as embodiments of cultural codes and activity (Consalvo, 2009), as commercial products showcasing the advances of new technologies (Chess, 2017), as contexts revealing much about the practice of composing processes (Colby and Johnson, 2013), and as systems that are built on sophisticated models of learning (Gee, 2003).

The latter view of video games is especially important to this thesis. As Gee (2003) states in *What Video Games Have to Teach Us About Learning and Literacy*, video games are key sites for observing how systems are “designed to enhance getting themselves learned” and it is only through studying them closely that one can understand the “theory of human learning built into good video games” (p. 6). Video games encompass a wide range of human endeavors and interactions, allowing us to look to them to help us understand everything from public engagement with technology to interface design, digital literacy, virtual community formation,

and conflict resolution. Kurt Squire (2021), in line with Gee's thinking of video games as hot spots for learning, examines video games as a genre for impact, working to identify the resources and efforts needed for the development and production of games to exhibit the potential positive influence they have. Under a different lens, Jane McGonigal looks at video games somewhat philosophically in her book *Reality is Broken* (2011), asking why millions of people devote large swathes of time and money to video games, if not because it provides something worthwhile or fulfilling (and not just money spent once per game to purchase it, but over time as well, due to monthly subscription models, such as that used by the video game *World of Warcraft*). A commonality between each of these sources is that video games are filled with potential. They are as much expressions of people's desire to play as they are expressions of people's desire to learn and share knowledge with others within a shared (virtual) environment.

In 2022, the term "video game" covers an exceptionally large body of media. Over time, scholars in game studies have struggled to come to a single, shared definition of what constitutes a game. Jaako Stenros (2017) counted over 60 definitions of the term game in articles dating back to the 1930s, most choosing to foreground different factors of games—such as the presence of rules and goals, being entirely separate from "real work" (Maigaard, 1951), or the existence of a termination/win condition (Parlett, 1999). Regardless of the nature of games, these games are categorized by society at large in commonly produced genres.

In many cases, the genres of games that people spend their valuable time playing are in such stark contrast to each other that it may be hard to believe they are a part of the same medium. There exist games that focus on providing the player with an immersive, interactive

narrative experience. These games aim to create an atmosphere, characters, and story that immerse players in a believable and intriguing game world, often utilizing narratives with an empathetic lens: tragedies, heartwarming tales, horror stories, or other story genres which are enhanced by asking the player to experience them firsthand. These types of games may not feature any challenging aspects at all (or, in some cases, games are given a “story mode” that allows players to experience the story without needing to master its mechanics). Such games have been dubbed “walking simulators,” emphasizing the lack of inherent challenge in the interactive parts of the game, which usually only require that the player explore the in-game areas presented to them along a set path, or solve the occasional puzzle. Walking simulators, puzzle games, and interactive narrative experiences often have simplified game rules, and therefore require significantly less learning to master. These stand in contrast to fighting games, which (outside of defined story modes) foreground a singular recursive challenge for players to overcome—other human opponents.

Besides walking simulators, there are games whose value is generated, not from asking the player to live a particular embodied experience, but rather from providing the player with a challenging goal to achieve using a limited array of tools. A popular example of a game like this would be *Tetris*, in which, rather than embody a character thrust into a hero’s journey, players are a nameless force that organizes blocks into aesthetically pleasing rows. The game’s purpose is explicitly solving a puzzle and racing against the clock to do so. The game itself is the malevolent force for the player to overcome. The success the player feels in completing an objective or getting further than a prior attempt belongs to the player rather than a character,

measured by the game's interface with some form of digital score display. Fighting games fall more into the latter defined category, asking that the player grow more comfortable with tools within a set system, but also testing their mettle against other players working with a similar set of tools. As fighting games series have grown, they have had narrative worlds built around the characters they feature that have invited players to explore not only competitive gameplay as it existed at the beginnings of the genre, but also the aesthetics, diversifying the potential people who would be interested in that type of game.

Even after completing single player modes like *Mortal Kombat's* story mode, credits may roll, but it is not the end of the game, or the need to continue learning. Games in the fighting genre typically invite the player to select a fighter from a roster of available characters, who is piloted and pitted against another player who does the same in a player-vs-player (PvP) format. Popular examples include the prolific *Street Fighter*, *Mortal Kombat*, *Guilty Gear*, or *The King of Fighters (KoF)* series. The goal of such games is typically to defeat the other player through whatever means the selected character has available, and much like competitive combat sports, to knock them out. While there is a set goal, the strategies by which one reaches this goal are based on being responsive to the actions of the other player in a way that makes learning a fundamental skill one must enact throughout play.

One of the primary inspirations for this study was Todd Harper, who completed an ethnography on the FGC in 2013 for his book *The Culture of Digital Fighting Games: Performance and Practice* (1st ed.). In this book, he talks about the deeply entrenched culture of this genre of video game, built around competition, a love for the franchises, the established

norms and traditions of arcade culture, and the simple fun of pushing buttons. He introduces the genre with an anecdote that I feel captures the essence of fighting games perfectly:

One of my most salient memories of those times was when another player—an Asian teenage boy who was much older than me—stepped up to the machine and put in a quarter. Suddenly, he was challenging me, and we were duking it out—digitally—for the right to keep playing. If I lost, then my game was over and my quarter was through. This game was entirely different from the other arcade games I had come to love: shooters, like Centipede or Gauntlet, or side-scrollers, like Super Mario, which I could play until the game itself did me in. With Street Fighter, if I wasn't skilled enough to beat my opponent, then my quarter was gone for good. (p. 1)

Here, we see a version of the time/money metric—a skilled arcade gamer could play indefinitely on a single quarter, unless challenged and defeated by another player with their own quarter. Harper approaches fighting games, their community, and the games themselves from the perspective of a gamer who had long been interested in fighting games but had never delved deeply into the intricate world of competitive fighting games while growing up with them (p. 3). As an adult—and a scholar in graduate school—he participated more wholly and analyzed the traditions and worthy values present in being a member of the fighting game community, showcasing in his book a world typically hidden from view. My experience was not too dissimilar from his. I played fighting games by myself, engaging with them as I would with any other video game: learning to play well enough to beat the challenges the game put forth in single player modes. To me—someone who had no experience with competitive video games at

that point—the difference between an opponent controlled by a computer and one piloted by a human was considerable. I did not understand where I went wrong when the strategies I used to defeat the hardest difficulties of the game’s artificial intelligence did not save me when combatting a human-controlled opponent. That gap in understanding did not fuel my desire to play the games, but rather pushed me away from them. But I could tell there was something deeper there, and that it definitely *looked cool*. As Harper expounds in his introduction: “...there were other ways to think about and play these games that I hadn’t even thought or conceived of yet. More to the point, it would be worth finding out just what those perspectives were” (p. 4).

One realization leads me to return to Gee’s work 20 years after its publication to reconsider how learning is embedded in video games: when played competitively against other players, or otherwise “taken seriously,” fighting games are played fundamentally differently than the game itself teaches one to play. This is because the community involved in playing a competitive game develops strategies that work within the game’s system in emergent ways. “Emergent” play is often the focal point of discussions about games, referring to the complex behaviors that can arise from experimentation within simple rules and structures. Ian Bogost (2015) calls such emergent behaviors “endless fractal blossoms” (p. 5), which I feel captures the magic of a friend suggesting additional rules to a game of *Uno* at a house party. As players participate in a game’s community and innovate upon existing game patterns and structures, the value of the built-in learning materials decreases. Increasing amounts of information created at the “metagame” level circulates in paratexts created outside of the game, and, being absent from the base game, new players will increasingly struggle if they depend solely on the game itself to

learn how to play it. Harper and I were defeated when we were younger because we were unaware of this emergent strategization and learning. And this process can affect one's willingness to play the game with others. As Matthew White (2014) suggests, "If learners can't figure out how to engage with your game before they reach their frustration or boredom threshold, they're not going to play" (p. 152). The unwillingness of newer players to continue the learning process is a concern for the genre that has spread over years, and examples can be found on social media. On Twitter, for example, @chyococo69 expresses frustration with performing comparatively simpler attacks (accompanied by a video): "My husband practiced Luke's jump kick to break Chun's sitting guard, we have a goal of success before 50 seconds left. It's just jump kick, but it's still important to us. This is one of the reasons why the fighting game population does not increase" (2022). Another user, @hidetone writes "dont see how it's possible to catchup to ppl that have played fighting games for 10+ yrs" (2022). Both of these tweets were made by newer players about different titles, and bring attention to different issues relating to the skill set required for playing fighting games even at the simplest level; they indicate a disconnect between the genre's embedded learning and what knowledge is needed to play.

Learning has always been considered best when it avoids such frustration and boredom. Writing scholar Neal Lerner says as much when he claims that "the important thing is not to make young children study the thing they don't like, for the moment school is not as interesting as play it is an injury" (cited in Ryan and Vie, 2022, p. 5). But rather than treat play as a method or the context of learning, we often reinforce a "work hard, play hard" mentality with children

that presents play, not as an activity to be valued, but as a reward for committing time to a more serious or valuable activity. Conversely, if there is no enjoyment to be gained from work, then it can only be seen as the drudgery that one must go through before one gets to play. I feel that these two ideas—the idea that frustration causes disengagement, and that work must be presented as counter to play, are pivotal to understanding the lack of widespread interest in fighting games.

From the standpoint of a fighting game fan, the idea that work is required before play may ring somewhat familiar. When preparing to fight against each other and not just a computer's programmed enemies, new and long-term fighting game players may both find that these games are simply too difficult to warrant spending time on, as mastery involves periods of practice and research that can be as uninteresting or unmotivating as schoolwork.

Many are familiar with Gee's principles of good learning embedded in video games, which were identified by conducting analyses on games that can be fully enjoyed and completed satisfactorily by oneself. Such games typically have identifiable beginnings and ends, and clear strategies for moving successfully from one point to the other that often do not change upon replaying. Gee considers the game *Pikmin*, for example, where the player jumps into the shoes of an ambitious space captain who is stranded on an unknown planet, and who has his primary objective defined from the beginning (get home!). Once the objective is completed, the credits roll. Adding a cooperative mode to the sequel to this game did not substantively change the goal or methods used to complete it, as two players work together to accomplish the unchanging goals, while the two-player competitive "battle mode" added to its sequels abandoned any relation to the story and required a whole new set of mechanics to make it viable. Fighting

games, however, are not so straight-forward in the relationship between the single-player experience and the multiplayer experience, as the basic toolset and goals do not change, but the strategies needed to succeed do.

AN ARCADE-STYLE IDEAL AND THE FIGHTING GAME COMMUNITY

The idea of video games existing within an ecology of practices and texts has been considered, but the ecological context of fighting games is worth considering in greater detail. The presence of video games on devices from desktop computers to specialized gaming consoles (such as those manufactured by PlayStation, Microsoft, and Nintendo) to mobile phones has contributed to a contemporary ecology where they can now be played (surreptitiously, if necessary) pretty much anywhere and anytime. Fighting games, however, have deep roots in the face-to-face (f2f) setting of the video arcade. In the late 1980s and through the late 1990s, arcade machines would consistently feature higher quality video games than could be owned at home, creating an air of exclusivity around arcades. If one were a fan of the type of video game that required access to an arcade cabinet, the arcade was the best place to play them during that time period.

Thinking back to Gee's line of thinking that video games are closed systems built to encourage learning to play, there are not much more clear examples than early arcade titles. For some games released as arcade exclusives (*Pac-Man* (1980), *Galaga* (1981), or *Ghosts & Goblins* (1985) come to mind), there is often no tutorial built into the game. They are designed to be fundamentally intuitive or have simple enough controls to be figured out through experimentation.

Minimizing the need for instruction makes sense in a context where people are meant to be intrigued by the sight of a game and motivated to spend a single quarter for eight minutes of their time. A game like *Pac-Man* is quite simple to control, requiring only the movements of a

joystick to move the player-character. It is also simple to understand the goals and threats of the game: eat all the white pellets, and do not touch the ghosts. The most complicated aspect of the game is the power pellet, which empowers Pac-Man dramatically, causing the ghosts to flee, and enables him to consume them for bonus points. The game could feasibly be played with a single hand if desired. Thinking about it technically, *Pac-Man* is designed around pixelated sprites—the small, computerized images displayed by the arcade cabinet that are programmed to interact with each other within a game’s system. If the sprite of Pac-Man collides with a sprite of a white pellet, Pac-Man will “eat” it, meaning it will trigger a sound effect, remove that sprite from the screen as Pac-Man moves past it, and prompt the score display to increase before the game proceeds. Breaking it down into that many steps may belie the frequency of that particular action and sound effect, but we can recognize that there is minimal input from the player resulting in substantial feedback. The minimalism of the interface and interactions within a game like *Pac-Man* might be considered central elements of its learnability. Anthropy and Clark (2014) discuss the simplicity of older video games’ opening stages, pointing out a difference in the title *Super Mario Bros.* (1985) and the more modern release in the *Mario* series: *New Super Mario Bros. Wii* (2009). They highlight the presence of a small sign that points to the right, and state that it points only to a disrespect for the player’s intelligence and “a lack of confidence on the part of the creator.” They continue:

Super Mario Bros. 1985, didn’t need a tutorial. It used design, a communicative visual vocabulary, and an understanding of player psychology—gained from watching players play the game, changing it, and watching them again—to guide the player to

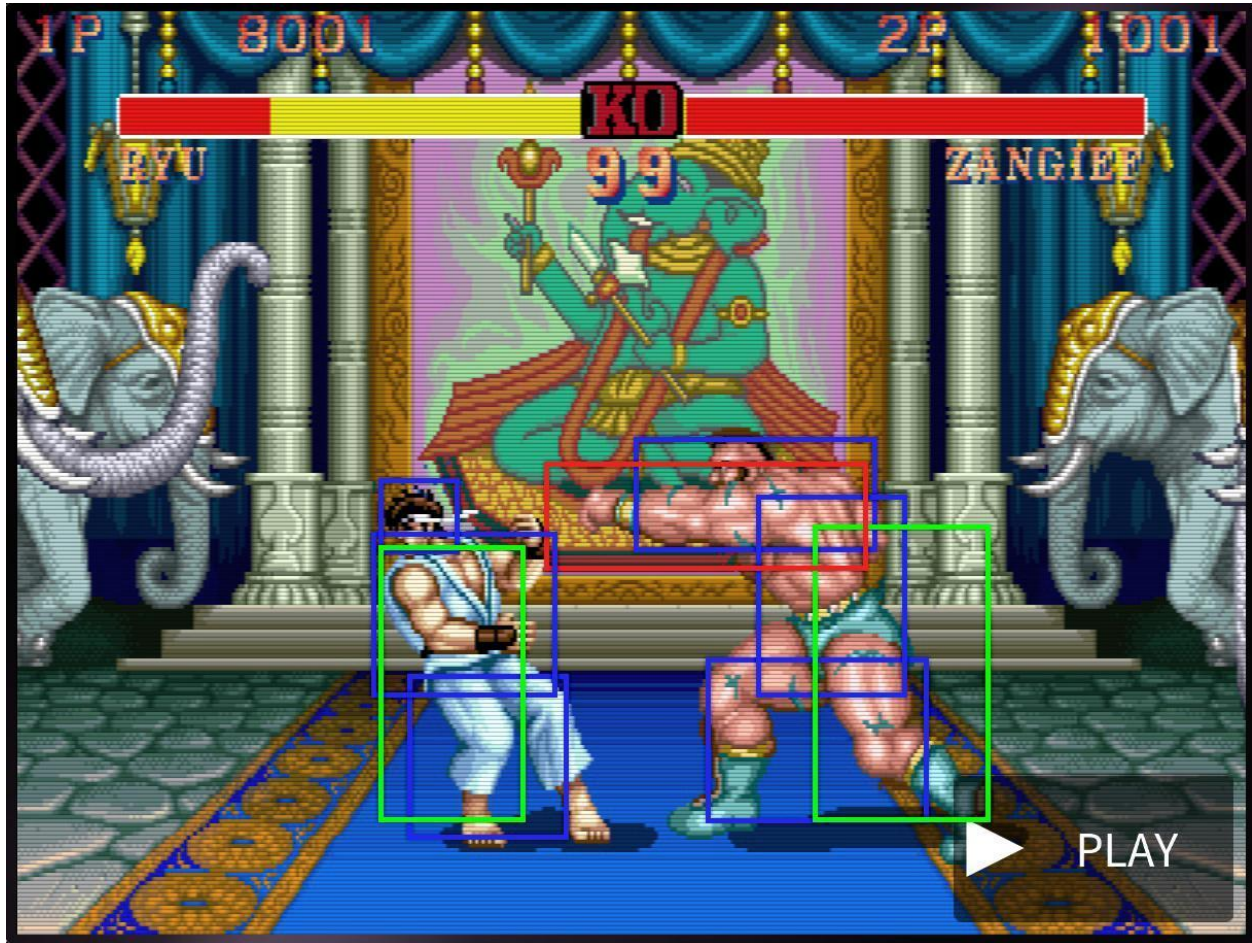
understanding the basics of the game. Those first screens teach everything the player needs to know: Mario starts on the left of an empty screen, facing right. (Anthropy & Clark, 2014, p. 5)

Games like *Pac-Man* and *Super Mario Bros.* captured a simplicity that guided people towards the game's goals by piquing their curiosity to play in that designed space.

By comparison, fighting games are significantly more complicated. What I have said about sprites so far remains true, but simply colliding with the opponent will not necessarily cause anything to happen. In a game like *Street Fighter II*, the player is met with more complexity in that they must move the sprite in addition to pressing other inputs to make their character attack. The results of these actions are also determined by the proximity of the characters and the location of the invisible hitboxes that determine whether a move lands and damages an opponent (an outcome which can be thwarted by a blocking move by the other player as well). These hitboxes (see Figure 1) are not something available via the typical game interface and are typically learned about through paratextual resources created by other members of the FGC.

Figure 1

“Hitboxes” in the Arcade Title Street Fighter II (1994)



Note. Screenshot Captured through PC Title *Street Fighter 30th Anniversary Collection* (2018).

If we compare the interfaces of a *Pac-Man* arcade cabinet and a *Street Fighter II* arcade cabinet, *Pac-Man* has no buttons and simple joystick motions compared to *Street Fighter*'s six separate buttons and unintuitive joystick motion combinations. The buttons in *Street Fighter* are not tied to a single action either, as they can be modified by the player character's current stance

(standing, crouching, or jumping, toggled between through joystick motions). These mechanics provide a default total of 18 differing attacks that also vary by the character chosen, not including the “special moves,” that are executed by performing a particular motion with the joystick (think “drawing” a shape with the joystick) and following it with a specific button press. Moreover, there were now spatial and temporal aspects to consider for gameplay. It is not a game about making one’s character collide with the opponent’s character, but rather, a situation in which a player must first bring their character into a space on the screen where their extended fist will hit the opponent, followed by pressing the appropriate button at the appropriate time to make it happen. The visual representation of the player’s character is not only moving in response to the player’s actions but changing its overall shape and area as well, requiring that players estimate based on previous experience whether an attack will land, not just observe in real-time how proximate two visible sprites are.

If a player makes it past the controls and can now throw a punch or kick when they want to and at appropriate spacing with appropriate timing, they still have more to consider. While a character’s fist connecting with the jaw of their opponent is intuitive, the game does not actually work that way. There is an *additional* set of sprites tied to the player-characters, that are used to measure whether an attack made contact or not. These sprites, which are never meant to be seen by the player, are generally represented by colored rectangles that are superimposed onto the characters by fans who dissected the game’s code—called “hitboxes,” “hurtboxes,” and “collision boxes.” What this means is that there can potentially be a mismatch between these hitboxes and how it visually appears to the player in a match, which can be a confusing ordeal

for a player with less knowledge of the game; it is easy to imagine hearing a new player exclaim: “He stuck his fist out, it didn’t touch me, and I lost anyway! What?!” In other words, the design of such opaque game systems has an inherent potential for a lack of clarity that can negatively influence a player’s experience.

Fighting game tutorials are a comparatively new feature in the design of modern fighting games despite having roots in arcade video games. Arcade games are to be enjoyed in public settings, with further clientele in line behind any given player, waiting for the person in front of them to exhaust their credit—individually purchased for the cost of 25 cents. They commonly show a simple enough objective and allow the player to enjoy the challenge of completing that objective until their inevitable failure (it is impossible to play forever), regardless of whether the game is intended to be played alone, cooperatively with other patrons, or competitively. The genre of fighting game was commonly played competitively within this context from 1991 to 2003 (the commonly recognized beginning and end of the “arcade era” within the FGC). Players who were skillful at competitive games got more value out of their quarter, and the losers needed to pay again for another opportunity. Thus, there was monetary value in learning to play these games at a higher level. But if this was someone’s pastime, they needed to spend money to practice as well. This scenario also increases the value of information *about* fighting games. In such an information economy, players may have kept their strategies secret from each other or even lied to each other about how attacks functioned with the intention of being able to play for a longer time at less expense when it came to be their turn. Thus, the arcade could become a hyper-competitive space for those even waiting to play on the fighting game machines.

Once the hardware of home consoles caught up to the arcades, game development companies were able to create home console versions of games that were pixel-perfect re-releases of the arcade cabinets (called “ports”). These direct re-releases of arcade games had a new pricing model. A brand-new title for the Super Nintendo home console in 1991 was between \$49.99 and \$59.99 USD on release, as opposed to the \$3000-4000 price tag on an arcade cabinet that would be housed in a franchise location (Robbs). Games were now making their way into the average person’s home in a way more recognizable to modern consumers. Without the need to expend 25 cents for a chance at victory, fighting game culture grew away from a trial-by-fire learning process for newer players. With one-time pricing, there were fewer economic barriers to play. Players did not need to have a pile of quarters or take turns with other people, and when the game ran out of time while playing on console systems, players would simply hit “restart” or “continue” to try again. Removed from the arcade context, fighting games took on a life oddly disconnected from other video games. Designed fundamentally around arcade environments and a gameplay cycle with no ending, they are a recursive practice-based competitive game. Among other video games on consoles like Nintendo’s Super Famicom, a fighting game is more comparable to a one-on-one competitive game like *Pong* (1972) than the titles that were taking the spotlight in homes like *Super Mario Bros.* (1985).

So, why were people still playing fighting games in arcades during the 90s and beyond if they could have perfectly serviceable versions in their homes? Harper (2013) points out in *The Culture of Digital Fighting Games* that fighting game fans tend to strive towards a sort of “arcade ideal,” which is best illustrated by a scene in which two players are in close physical

proximity to each other, playing in a public space, with a crowd of other fighting game fans surrounding them (p. 17). In other words, an ecosystem had developed around these games that contributed to their enjoyment and learnability. Where there were players hiding their skills, there were also those who would go to arcades in groups, carpooling and splitting five dollars amongst each other to see their friends engage and succeed in the same spaces they do; or those who teach each other what they know about the game precisely because of the new perceived value of a quarter. Within the framework of a f2f community of practice with shared interests and values, teaching others so that they can learn how to win so they do not lose their time and money becomes a more common scenario than an experienced player dropping a quarter into a machine to bully a new player.

These competitive spaces do not exist in quite the same way they did in the late 1980s and 1990s anymore, but that is not to say they do not exist. In the modern age of fighting games, there exist small venues that generate revenue by renting time using video game consoles or computer setups to the general populace (often at an affordable price of only a few dollars per hour). At designated times, such venues also commonly host competitive video game tournaments partially as a fundraiser, but also to fill the void left by the fading of in-person arcade-styled community gatherings (pp. 18-21).

I have attended upwards of 150 of these local/regional tournaments myself, with no delusions of grandeur or competitive drive pushing me to take first place. Mostly, it is an efficient way to learn from other players and spend time with like-minded folks. With no pressure of time or finances to compete—besides the overhead cost of entry—fighting game

spaces are much less about dominating an arcade space, and more so about participating in a community centered around recursive practice, as musicians, athletes, and martial artists do. Community figureheads commonly refer to the “arcade era” nostalgically, but also from a perspective that admits modern fighting game fans have the superior onboarding experience. Patrick “PatTheFlip” Miller is one of such voices who publishes essays and blog posts related to fighting games and was interviewed on the podcast of another large presence in the community, Stephen “Sajam” Lyon. In this interview (2022), they discussed potential difficulties in attempts to enjoy specific fighting games at arcades—sometimes there was no one present who wanted to play a particular game, or the arcade did not own a machine for it. Miller follows this observation with a comparison to modern day fighting games:

People have got to understand. Whenever you see content that’s like ‘oh, what’s going to save the FGC?... The FGC is in one of its most beautiful eras right now. . . .2004 is when they switched over to console, right? 2002 and 2003 were more arcade focused. In the hallowed arcade era, the legendary time... [everyone] involved in fighting games right now wanted to be a part of that.

To some degree, many who compete or otherwise participate in the culture of fighting games value and pursue this arcade ideal, even if they may not realize it. Modern FGC competition venues are a kind of pop-up arcade that serve the function of facilitating f2f competitions in the absence of traditional arcades, one advantage of which is that the competitions held there are often recorded and widely distributed through online media, making it possible for critics and

players around the world to “peer over the shoulder” of players to be a part of the event and learn from players’ performances, much like exhibitions in contact sports.

The main alternative to play with other fans of these games would be via the online services offered by home versions of fighting games. To me, there is a certain lack of intimacy and camaraderie when playing fighting games online. According to Harper’s (2013) observational studies, I am not alone in my aversion to this mode of play:

One might wonder why this [arcade-based] mode of play, with its emphasis on cohabiting space and playing in person, would be so dominant, particularly in a world where online-capable consoles with arcade-perfect home versions (“ports”) of most fighting games are commonplace. Wouldn’t online play offer a better opportunity to fight against many different types of opponents, without the cost and effort involved in finding a physical space to do it in? The answer, almost universally, was that it does not. [...] Many of the reasons that the respondents I spoke to avoid online play—either altogether, or only using it in highly specific circumstances—dealt with its impersonal nature, and the behaviors enabled by anonymity. (p. 24)

The physical locations I could frequent to bolster my skills—and make a friend or two in the process—quickly became a part of my social life. Unfortunately, due to the COVID-19 pandemic, these in-person gatherings—and their corresponding gaming venue spaces—have dwindled because of bankruptcy or foreclosures due to a lack of consistent income. Players across different regions have lost their physical connection to participating in the fighting game

community—including myself, as the two different venue spaces I used to frequent closed last year. Fighting games continue their evolution from side-by-side arcade-era competition to online distanced competition, driven to accelerate in recent years by the limitations brought on by the COVID-19 pandemic.

Arcades also served as laboratories for player experimentation and strategy development, where theories of human and technological interaction could be tested in conditions that mimicked the complexity of actual gameplay. What is interesting about the community in fighting game spaces is the willingness to participate in this process—to ask and answer questions. After playing against someone else, win or lose, it is likely that the conversation that followed would include a line of questioning like “Hey, good games. How do I deal with those fireballs?” Alternatively, it is possible that players might have an entirely negative experience, seeing their failure as a signal to stop trying rather than a motivator to improve. As real-world spaces, players may even bully or be bullied based on their performance in the games or other factors, leading to even further schisms in play and learning experiences.

As noted previously, learning to play fighting games is easier said than done. Even with home console versions at the ready, and unlimited time to practice, any game that was a port of an arcade version still did not feature tutorials or other supplemental learning materials. In most cases, other players were by far the best resource. Now, newer fighting games do have tutorials. However, their complex nature and roots in arcades seems to have left a lasting impact on the structure of learning that is present in these games. And while arcades may have been replaced as the home of video games in the United States, arcade culture was still alive and well in many

other countries; *The King of Fighters* series was extremely popular in Central American and South American arcades, the *Guilty Gear* and *BlazBlue* series in Japanese arcades, and the *Tekken* series in South Korean arcades. Where many fighting games have fully embraced console releases as a default, some titles continue to be released first in arcades, later to be ported to home systems. *Tekken 7* was released first as an arcade title in 2015 before being ported to consoles in 2017. Because of this fact, *Tekken 7* also has no tutorial built into its interface, even as one of the most popular, modern, and relevant fighting games on the market.

Recall Gee's (2003) question in the introduction of *What Video Games Have to Teach Us About Learning and Literacy*: "How, in heaven's name, do they sell many of these games when they are so long and hard?" (p. 3). It may have seemed strange that a difficult hobby with high variance between products and a comparatively high price point sold well. Sports equipment sees no lack of sales even though sports can be objectively difficult to play and require much more than 50 hours of experience to reach a level deemed competitive. Some video games, such as *Dark Souls: Prepare to Die Edition* (aptly named), are marketed specifically as difficult, but sell well regardless. Fighting games are in an even stricter niche than these difficult games, but the games remain popular. Much like sports, they require a rewiring of thoughts and learning processes to understand and play, and this can reduce their attractiveness to consumers. But sales of fighting games are not necessarily low. *Mortal Kombat 11* was the fifth best-selling game of 2019 (Grubbs, 2020), and by 2021 had sold more than 12 million copies worldwide (Grubbs, 2020).

It is common to find through game reviews and other forums that players who purchase fighting games often stop playing after only a short stretch of time. In other words, sales do not necessarily equal engagement or learnability. In saying “I soon discovered, of course, that good video games (like *Deus Ex*) sell millions of copies” (p. 6), Gee implies that higher sales are reflective of a better video game, which is a correlation many would agree with. However, despite comparatively lower sales than other genres, an abundance of discourse and the presence of fans in tournament spaces, local venues, and online forums would suggest that fighting games cannot be categorized generally as low quality. So, there is something else going on that keeps people buying the games but makes them stop playing them. Moreover, fighting games are somewhat intimate in their design. Players do not complete levels and stages, but rather exhibition matches against an individual opponent (barring exceptions like CPU-controlled opponents and side game modes created for more than 2 players). A nearly equivalent genre is tabletop and trading card games, where players use decks of cards to complete actions and move towards victory in a one-on-one format. However, trading card games do not ask players to act with immediacy to their opponent. They can take their time and think between and during turns. There will always be one winner and one loser, and the winning player will experience success, while the other experiences failure, but unlike fighting games, there is clarity through leniency in time and interfaces. The sort of design scheme that fighting games offer is fairly uncommon (without it being a team game that pits three or more players against each other). Most games are designed to allow a player to tackle a challenge on their own terms, and do not punish a player

too harshly during the learning process. Jason Mathias (2014) calls this tendency to give players room to experiment “the mini-sandbox.”

The very first level of the game, the player stands in a riverbed. There are no enemies attacking the player, but also no instructions for where to go, or how to get there. So, the player simply has to press buttons and figure out how to move, how to jump, and how to get out of the riverbed. For a game that will later be very intense and require quick reflexes to survive, this beginning scene is surprisingly calm. (p. 33).

It is common to incentivize experimentation and reward out-of-the-box thinking while adhering to the design grammars of that genre, until a player is fully comfortable controlling their character, as is exemplified by Mathias’s example in *Ninja Gaiden Black*. In other words, video games are often designed at least partially to make the player feel successful throughout the whole game, with challenges typically growing over time as a player progresses. With consistent failure as a feature of PvP fighting games, learning needs to take on a different form.

LEARNING A FIGHTING GAME

With an understanding of *what* and *why* fighting game players are attempting to learn (at least at the systems and controls level—so far), it is important to understand how video game learning is often structured in other genres before I can discuss where fighting games differ. This is where Gee and his extensive and widely applicable heuristic for learning within video games is quite useful. Gee approached *What Video Games Have to Teach Us About Learning and Literacy* from the perspective of an educator, and therefore uses his prior experience as a scholar and linguistics professor to structure his analysis of video games around 36 learning principles. He uses the concepts of semiotic domains, situated learning, analysis of embodiment and identity, and careful dissection of his own gaming experience to give us this intimidating list:

1. Active, Critical Learning Principle
2. Design Principle
3. Semiotic Principle
4. Semiotic Domains Principle
5. Meta-level thinking about Semiotic Domains Principle
6. "Psychosocial Moratorium" Principle
7. Committed Learning Principle
8. Identity Principle
9. Self-Knowledge Principle
10. Amplification of Input Principle
11. Achievement Principle
12. Practice Principle
13. Ongoing Learning Principle
14. "Regime of Competence" Principle
15. Probing Principle
19. Intertextual Principle
20. Multimodal Principle
21. "Material Intelligence" Principle
22. Intuitive Knowledge Principle
23. Subset Principle
24. Incremental Principle
25. Concentrated Sample Principle
26. Bottom-up Basic Skills Principle
27. Explicit Information On-Demand and Just-in-Time Principle
28. Discovery Principle
29. Transfer Principle
30. Cultural Models about the World Principle
31. Cultural Models about Learning Principle
32. Cultural Models about Semiotic Domains Principle
33. Distributed Principle
34. Dispersed Principle

- | | |
|--------------------------------|------------------------------|
| 16. Multiple Routes Principle | 35. Affinity Group Principle |
| 17. Situated Meaning Principle | 36. Insider Principle |
| 18. Text Principle | (Gee, 2003, p. 221-227) |

I will repeat my earlier observation that Gee did not base these principles on competitive games that are meant to be played against another person. His principles assess the learning capability of games primarily intended to be enjoyed as single-player experiences, rather than games that facilitate emergent gameplay in response to other humans. However, I think many of these principles, such as those based on and relating to semiotic domains, affinity groups, identification, and situated meanings are closely applicable to the unique nature of fighting games and their existing culture, with minor adjustments.

Moreover, competitive games are significantly more *repetitive* than the kinds of games Gee experiences. Players are encouraged to interact within a limited space with the same tools repeatedly, experiencing a new set of challenges based on the creative use of those tools each time. There is rarely a narrative for players to progress through that leads automatically to growth in the primary modes the games are built around, or that introduce new tools and dynamics over time. I find it fruitful to view fighting games as a recursive practice that rewards experimentation structured around simple goals—like physical sports, martial arts, composition, art, or music. The players’ capabilities are what grow after learning, not the capabilities of the fictional characters. In other words, the outcome of individual matches is not the sole determinant of success. Variance in play does not always stem from unique challenges provided

by the game designer, but from unique choices made by human opponents. Learning occurs but is not limited to the parameters established solely by the coding of the game itself.

Where skill in many competitive areas is measured by a ratio of wins to losses, long-time FGC members tend to measure their progress by consistency and knowledge in decisions made across thousands of matches. In his essay *How Do I Use Training Mode*, Patrick Miller (2022) alludes to this buildup of knowledge over time in saying:

High-level play in most fighting games these days typically assumes that both players have roughly equivalent knowledge of all game states, and for games with less complicated characters and systems, like *Street Fighter* or *Strive*, that's generally a fair assumption, in the same way that we can safely assume anyone playing at the World Series of Poker knows all the rules of the game, the number of cards in a deck, etc. (*paragraph 6*).

Miller goes on to write “If I can put you into a lot of situations where I know the right answer and you don't, I'll probably win before you figure out the right answer to any of them” (Miller, 2022). A newer player of fighting games has not spent the time to learn the game to such proficiency yet, so the problem that needs to be addressed lies in keeping their interest or motivating them to do so.

In review of Gee's principles, the default format of fighting games does not support every principle Gee lays out for us, and so I have selected a few key principles to exemplify the ease and difficulty of applying these to fighting games. Out of the context of Gee's experience, these

can be difficult to digest, so, following White's suggestion that groups of information are easier to keep track of (p. 42-43), I have grouped them by their focus on the player, on the interface, or on the community. I will provide my thought process for how fighting games embody them, and how this genre complicates our understanding of how learning takes place in video game ecologies.

Player-Based Principles of Intuition and Cognition

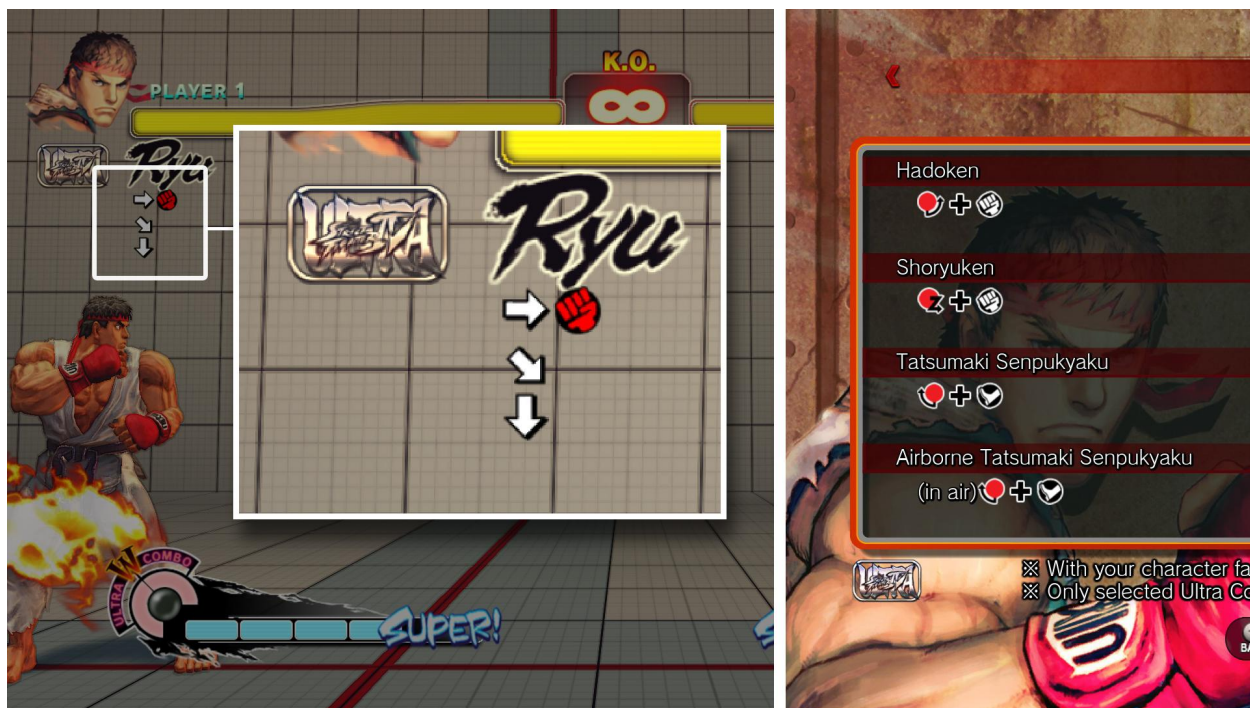
While Gee's learning principles define an ecology of learning in which various elements are interdependent, I think it is useful to understand the role that they play in constructing the learning environment. Player-based principles of intuition and cognition include the kinds of dynamics that I think are generally true of players of all video games; they describe the strategies and assumptions that players bring to the game environment, both from other learning situations generally, and from other video games specifically. Certainly, video game designers can design with these dynamics in mind, prompting players to use their present knowledge about the world and about how games work to make educated guesses about how to succeed in a game world.

How knowledge is coded into game environments and how knowledge can transfer between situations are the focus of Gee's Semiotic Principle and Metalevel Thinking about Semiotic Domains Principle. Knowledge may transfer between texts within a genre as well, but may be more difficult to accomplish when the key genre in question is atypical by comparison. Knowledge of the conventions common among video games allows gamers to have a decent understanding of a game's mechanics with relative ease, even having never played them before.

Such passive learning encapsulates what Gee (2003) means by “coming to appreciate interrelations within and across multiple sign systems” (p. 222). What happens when knowledge of that sort does not apply, or any attempts to use prior knowledge in a seemingly familiar situation are met with failure? My guess would be frustration before learning. Like any other semiotic domain, fighting games have a separate (though connected by virtue of being video games) set of design grammars that lead a player to build a fundamental understanding of the genre through experience. There can be shared functionality between, for example, a *Super Mario* game and *Street Fighter*. Mario can jump, and so can Ryu, but what a “jump” entails changes based on which series we are examining. Mario’s jump can be extended by holding down the button, is affected by momentum, and can be altered slightly by moving in different directions while midair; Ryu’s jump is static, always in the same arc, taking the exact same amount of time to complete, and leaves him completely defenseless. The latter version of jumping is also standard across most fighting games, with minor differences dependent on the game (it is possible to block enemy attacks in the air in the *BlazBlue* series, for example). Navigation through a game’s menus is also standardized across home console games, including fighting games, meaning that the player is not met with unfamiliarity in controls until they have navigated through menus and choose to participate in a battle.

Figure 2

Representation of command inputs in Ultra Street Fighter IV (2014)



Note. The icons built into the “input display” feature differ from those displayed in the “command list”

Fighting games also exercise the Semiotic and Metalevel Thinking about Semiotic Domains principles by consistently displaying recurring visual signs, just as most mobile apps will use similar iconography for common affordances, like using a small image of a house for a home button, or a magnifying glass to represent searching. Fighting games across the genre often use similar icons resembling motions as opposed to the literal inputs the game parses. For example, to execute the Street Fighter character Ryu’s signature Hadouken fireball attack, the

input would be “↓↘→“ followed by any of the buttons on the controller assigned to a punch. Street Fighter (and any other games featuring Ryu) would show this motion with a symbol that depicts a joystick moving smoothly in a 45-degree arc from the “down” position to the “right” position. Most fighting games take this approach, even when using a controller interface that has no joystick. It is conceivably more intuitive to see the three separate directional inputs as one smooth motion. Interestingly, the training mode of nearly all fighting games records controller inputs and displays them along a portion of the user interface via the “input display” feature—which allows players to identify mistakes in their execution by portraying inputs using eight-directional arrows. There is an inconsistency here: the list of possible commands uses an intuitive illustration of the controller, but the mode built for practice does not (see Fig. 2). While not every fighting game displays their inputs inconsistently like this (the 2020 game *Granblue Fantasy Versus* uses directional arrows in its command lists), it showcases a mismatch in fighting games between the onboarding process and the recursive practice that is required to build skill. When one is first learning, it is more important to be able to execute the move at all than to understand how the mechanics work and build muscle memory that prioritizes accurate inputs. A potential method of lessening this inconsistency would be to provide instant feedback on screen in practice/learning-centric modes that identifies which attack or motion was completed as it was done. Doing such would ensure that when players complete an action, they can immediately verify if they had accomplished what they set out to.

Some of Gee’s learning principles (including the Identity Principle and the Bottom-Up Basic Skills Principle) remind us that players bring to games a long history of learning, including

skills that designers might decide to not include in tutorials or otherwise draw attention to because they are assumed to be basic skills that all players will have, or which they assume are easily observed or absorbed through social settings such as an arcade. His “Identity Principle,” for instance, highlights the usefulness of having players move across various identities available in the game world, and choosing among different available ways of being in these worlds as a way to facilitate learning. He defined this principle thusly:

***Identity Principle**—Learning involves taking on and playing with identities in such a way that the learner has real choices (in developing the virtual identity) and ample opportunity to meditate on the relationship between new identities and old ones. There is a tripartite play of identities as learners relate, and reflect on, their multiple real-world identities, a virtual identity, and a projective identity. (Gee, p. 222)*

Some games might achieve this through archetypes common to a genre (will the player decide to be a thief, wizard, or fighter in the fantasy video game they are playing?), or they might offer choices based on playing styles (are they a melee, range, or support player?). But player choice and identification with a playable character in a fighting game is limited by the short period of time in which such games take place, and the frequency with which players, especially new ones, will change the character they are playing. Fighting games may share some key genre elements, but since these are defined by an arcade ideal in which tutorials are often absent, these will not necessarily contribute to player learning until the player has experienced multiple fighting games. Some fighting game characters may match established character archetypes or play styles, but since they all have similar moves tied to a set array of controls (a “high punch” and

“low kick,” for instance), the player must still understand the systems at their core to change their behavior in response to the style being used by their opponent (rather than simply assuming a new identity to become successful). And these identities can often be played counter to their archetype successfully in PvP situations; a ninja character, who is objectively faster by system parameters, can be played slowly and methodically, and a lumbering seven-foot-tall brute can be played aggressively and quickly.

Other of Gee’s principles (including the Intuitive Knowledge, Psychosocial Moratorium, and Cultural Models about Semiotic Domains principles) address the consequences of the actions that players take, and the reflection on these consequences that lead players to attribute value to these pre-game and in-game experiences. A common issue players have when learning fighting games is feeling as though their skills are not progressing because they focus on outcomes (repeated losses) and not marginal improvement. Resisting such assumptions can require engaging in learning similar to Gee’s (2003) Cultural Models about Semiotic Domains Principle, which is defined thusly:

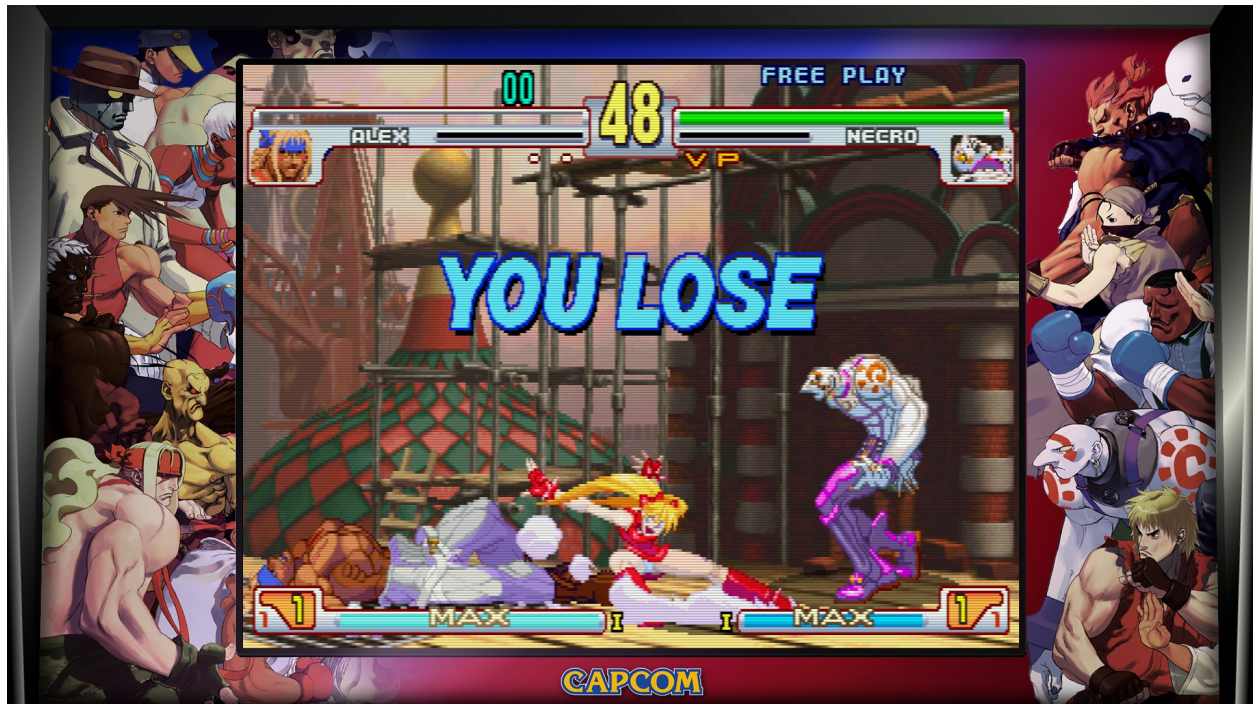
Learning is set up in such a way that learners come to think consciously and reflectively about their cultural models about a particular semiotic domain they are learning, without denigration of their identities, abilities, or social affiliation, and juxtapose them to new models about this domain. (p. 226)

Realizing that players’ models of understanding can interfere with learning allows one to begin to address such barriers to learning directly. Stephen “Sajam” Lyon, an FGC content-creator who

helps new players understand and learn fighting games, produces a series called *Learning How to Learn* that provides guidance in doing just this. In one of his videos titled “How to Recognize Your Own Improvement (it’s hard),” he compares the learning process to losing weight: “A lot of times you notice when your friend is losing weight and you say to them ‘Oh my god you’ve lost so much weight, you look great.’ And they always say the same thing: ‘Thanks, I don’t really notice it’” (Lyon, 2022). His metaphor captures one of the cultural models that players may be affected by as they embark on their fighting game journey. It can be easy to believe that a loss is a failure, and a failure means a lack of improvement. And it may be difficult for a player to notice that they made successful use of a strategy they had been practicing, but were unable to pull off in a real match up until that point. That is a large barrier to surpass, even if the match was lost in the end, but the focus on the outcome, like a loss of ranking points alongside a “YOU LOSE” textual prompt (sometimes accompanied by a voiced announcer), can diminish feelings of improvement (see Figure 3). The Cultural Models about Semiotic Domains Principle can reflect the process of overcoming false objectivity in these games to allow room for understanding and applauding marginal growth.

Figure 3

The screen displayed upon losing a single player match in Street Fighter III: Third Strike



Note: “You Lose” prompts are common when playing these games single player or via online services, but are often replaced with “Player One/Two Wins” in f2f competition.

Gee’s (2003) Psychosocial Moratorium Principle, which states that “Learners can take risks in a space where real-world consequences are lowered,” can also be paired with the Cultural Models about Semiotic Domains Principle to understand how learning works differently in fighting games (p. 226). To new players, the risk of making the wrong choice might seem lower due to the relatively limited input options provided to fighting game players. This might even be based on a model of how digital technologies work. In *Theorizing Digital Rhetoric*,

Davisson and Hess put forth the idea that digital technologies operating on simple binary systems of yes and no (1 and 0) is a serious limiting factor in how we absorb information through technology, leading us to favor notions of correctness and objectivity that we assume must be true because screens are simply displays of inputted information. Complexity is seemingly reduced when information must be formatted by “yes” and “no.” If players assume (or tutorials suggest) that situations as they occur in fighting games are binary as well, with all possible outcomes reduced to simple measurement (i.e. who hit the attack button first), then players will fail to appreciate the true complexity of the fighting game context in which the amount of time an attack takes to occur, the position characters are located on the screen, and how attacks and defensive choices interact influence the outcome of any interaction. Experienced players aware of this fact can use that knowledge to overcome their opponents by making strategic decisions in battle based on hard data. While there are a striking number of visual cues, audio cues, and interface elements displayed on screen at any one time, it can be exceptionally difficult to keep all of it in mind at once, and risky to assume that one can process this data and respond appropriately in real-time. The real-world consequences of failure are indeed lowered by the ability to quickly start a new match, but the invitation to take such risks remains a key element of fighting games where experimentation is key to responding to emergent play styles.

Fighting games thus embody the inherent risks of learning and attempting to put knowledge into practice. Depending on multiple factors like a specific character’s properties, their position on the screen, the timing with which the player presses a button, or even erroneous game details that seem unrelated to battle, such as the number presently in the round timer, the

flow of battle can be greatly impacted. In other words, while yes, there is binary code determining a specific outcome that would remain the same if the exact same situation played out again, it is highly unlikely that a situation actually would play out in exactly the same way due to the sheer number of affecting factors. Recall the value of information in arcade settings. Fighting games do honor knowledge gained over time, and players in arcades who knew more about the functionality and systems of a fighting game gained back the opportunity cost of their quarters as recompense for their tireless study. But while they embody some of Gee's identity-based principles of learning, fighting games also resist the application of this intuitive knowledge or knowledge gained through reflection by requiring players to employ it in a context in which being in possession of such knowledge is simply not enough to ensure success.

Interface-Based Principles of Game Development and Design

Learning principles can often come into focus best when thinking about how the game world and interface themselves are developed and designed. For example, Gee's (2003) Active, Critical Learning Principle can be used to assess the impact of the design of the game world on learning and is defined thusly:

Active, Critical Learning Principle—All aspects of the learning environment (including the ways in which the semiotic domain is designed and presented) are set up to encourage active and critical, not passive, learning. (Gee, 2003, p. 221)

According to Gee, active learning takes place when a player is “experiencing the world in new ways” and critical learning as the learner being “able consciously to attend to, reflect on, critique,

and manipulate design grammars at a metalevel” (pp. 31-32). The game that he examined to create this principle was *Pikmin*, a game that pits the player against the virtual environment (PvE). Despite not being a competitive title, I think his reasoning for the Active, Critical Learning principle being one of his most significant principles is worth discussion as it pertains to semiotic domains and situated meaning. In observing a child playing through *Pikmin*, he notes that the child picked up on consistencies in the game’s design that recurred in various locations, such as visual cues that hint to the player which action to take to solve a puzzle.

The game conveys its design grammars subtly through game world elements such as color coding and repetition of symbols; the example provided was Captain Olimar’s Pikmin (the small alien creatures who assist him in rebuilding his spacecraft to return home), which are identified by color and their properties. The yellow Pikmin can be thrown farther than the other variants, and can pick up inorganic rocks that explode. Being the only Pikmin type that can pick up bombs, they gain a unique meaning in the situated context of the problem the player is trying to solve: the type of Pikmin that can pick up rocks or the type of Pikmin that can be used at long ranges (p. 33). Such design choices exemplify how learning during normal play (not just via a tutorial) is made possible by repeating cues that players can notice as they play. But in fighting games, interaction with the game environment over an extended period of time is usually very limited by the short length of individual matches, and the dynamic nature of facing challenges based on the strategy of one’s opponent requires more than just casual recognition of repeated cues. Ongoing active learning (in a compressed time frame) is critical to learning in fighting games where emergent play dictates that certain attacks and techniques can only be ascribed

situated meaning in relation to the actions of one's opponent. For example, an attack's purpose may be understood on a basic level as causing damage, but can be deployed in certain situations to knock an opponent out of the air. But success of such an application is dependent on a range of factors, including slight differences in an opponent's position on screen. The complexity of competitive fighting games thus requires FGC members to continually engage in active, critical learning as they evaluate the results of their attempted moves in a PvP environment.

In PvE-focused games like *Pikmin*, situations (and the cues that players respond to) are more likely to be consistent. For example, the exploding rocks will always appear the same visually, and there is no situation where a purple Pikmin is the better choice for a ranged battle. That consistency lends itself to critical learning, but competitive matches against players in fighting games can only be consistent if opponents decide to use their tools in the exact same way across multiple similar situations.

The short time frame of competitive fighting game matches makes it hard to see how some of Gee's learning principles apply, but attempting to do so can help draw attention to the overall player experience that extends to the interface as well as the playable game. For example, Gee (2003) defines his Multiple Routes Principle in this way:

Multiple Routes Principle—*There are multiple ways to make progress or move ahead.*

This allows learners to make choices, rely on their own strengths and styles of learning and problem solving, while also exploring alternative styles. (p. 223)

Despite there being fewer traditional “routes” in fighting games compared to games that present players with a more spatial orientation, I believe this principle to have two different applications to fighting games. First, the characters that players choose are often designed to have individual strengths and weaknesses, allowing players to express their own gameplay style with a toolset that suits them best or, alternatively, to choose the character that best suits a specific anticipated challenge. Using a specific character’s tools within the game system can be classified as identifying multiple routes to solving the same problem. However, character selection is often a meta-level consideration made via menu interfaces *before* getting to gameplay. If what we are assessing are intuitive learning opportunities for players to succeed by trying different options, it does not easily fit Gee’s description of “progress or moving ahead” considering that A. at the stage of character selection, the match has not technically started, and B. the gameplay goal of depleting the opponent’s life gauge and knocking them out ends the game without in-game progress having been achieved.

Secondly, the Multiple Routes Principle could be applied to choices players make *in matches*, such as which of their character’s abilities they use in attempting to defeat their opponent. Even though matches can be extremely short, players can potentially make hundreds of different decisions before a round ends. It is the furthest space from the safety of a practice environment, but as long as their character has not been knocked out yet, they have ample opportunity to try. In this way, there are certainly multiple routes to victory. Receiving useful feedback for good or bad choices may be lacking, however, since the ultimate “YOU WIN” prompt does not provide a way to easily reflect on the numerous individual choices made during

the match. Applying the Multiple Routes Principle to fighting games draws attention to the choices that players make both before the game and during the game, but the emergent nature of these routes means that the learning made possible by problem-solving and exploring alternative styles of play is much more complex. They are not simply following a path through a well-tended garden, but tracing the “endless fractal blossoms” of an unruly wilderness (Bogost, 2015, p. 5).

“Simple” vs. “Technical” Control Schemes

As we consider interface-based principles it may be important to note that many fighting games offer the player a choice in how they will be controlling their character, usually split between a variation of “simple” and “technical” controls. As the names imply, one is geared towards beginners, and the other towards those who are fully integrated into the affinity group of fighting game players. Developers have been putting some kind of “simple” control scheme into fighting games for quite a while, and such schemes have been identified as part of the popularity of fighting games such as *Tekken 7* and *Fantasy Strike*. These control schemes are often the subject of heated discussion among highly engaged FGC members. Generally, the fear stems from the perspective that the availability of these control schemes diminishes hard work and practice, or makes gameplay so trivial as to be uncompetitive. Given how fighting games are largely centered around self-improvement and understanding game mechanics, it’s easy to understand why many players would stray from the option that removes the learning curve and instead prioritizes displaying a character’s power. To a fighting game veteran, playing with

simple controls enabled would seem like cheating, or at the least would be more boring than the alternative.

Simple controls make it trivial to input a visually impressive string of attacks, but they often *disable* as much as they enable, often outright removing the potential choice of doing anything *but* that option. After all, they are simplifying a full arsenal into something that can be performed by tapping a single button repeatedly. For a 2011 article addressing the discrepancy between the simple and technical control schemes in fighting games, game writer Michael Rousseau decided to test the controls out himself to determine whether competitive players needed to be worried about being outperformed in tournaments by new players. After fiddling with the simple control scheme in the 2011 game *Marvel vs. Capcom 3: Fate of Two Worlds*, he came to this conclusion:

Yes, I could easily chain a combo that would make a new player go “whoa” with only two buttons, but I learned how to do that after my first two minutes of playing. Beyond that, [the character Chris Redfield] became nothing more than a basic character with a few weak pokes and a laughable selection of options for heavy damage. All of the other fighters I tested fared similarly. I won’t even get into how badly Simple Mode affects Sentinel, except to say that there’s a decided lack of mouth beams. (Rousseau, 2011)

The learning value in the FGC is closely connected to the difficulty of performing complex (and powerful) moves, and then also performing them properly, at the right time and place. Simplified controls remove the incentive to improve at a complex task in favor of providing more intuitive

or otherwise seamless avenues to a player expressing control of their character. The limitations of the simplified control scheme would then act as incentive to push the character further once a player is past the onboarding stage and is interested in breaking those barriers.

This doesn't mean that designers should avoid using simplified controls, but rather the opposite. There can be substantial value to allowing players choice in control schemes; it does not need to take away from the gameplay. The inclusion of simplified control schemes, even universal ones that cannot be disabled for any player, adds another layer to the depth of a game. Games like *Granblue Fantasy Versus* (2020) allow the player to perform special moves either with a traditional motion *or* a one-button input, with different gameplay mechanics for each. If the player performs the traditional motion input, the move will do more damage and be available for use more often. The point is that the player is rewarded transparently for their decision to perform the more difficult task. The one-button specials are much easier to execute, but often have a drawback when compared to the motion variation. The character will be more open to counterattack, or they will lose access to that move until five seconds have passed. There is a level of risk-reward at play, where a player experienced with the rewards and risks of each must make a choice based on the situation they are presently in to benefit themselves most. For example, if their opponent is one strike away from losing, it does not matter if the attack they use will be unavailable for five seconds. The match will be over! In that situation, it is almost always a better choice to perform the simpler move with less room for error. However, if the opponent has a considerable lead, then access to a life-saving attack soon after may be necessary, making the simple controls a worse tactical choice in the long run. Even in this case, players will still

want to decide between simple and technical controls. If they prioritize aesthetics, then the ideal way to see their character's more complex and detailed animations more often is to perform the difficult-to-execute option, so as to avoid the cool down penalty for using simple controls.

Community-Based Principles of Distributed Learning

Learning happens beyond the screen as well, and the FGC provides a rich forum in which one can observe how the strategies and skills that players develop connect them to a community of practice beyond the game interface itself.

Even though fighting games are competitive, players still share their hard-won knowledge by acting as “insiders” who teach others interested in learning the game, regardless of a lack of other social connections. Gee's (2003) Insider Principle recognizes that players are not merely consumers of the game product, but producers of paratextual content that contributes to a network of people, texts, and technologies that facilitate learning within and beyond the game itself. These networks recall Gee's (2003) Affinity Group Principle, which states that “Learners constitute an ‘affinity group’ that is, a group that is bonded primarily through shared endeavors, goals, and practices and not shared race, gender, nation, ethnicity, or culture” (*p.* 227). FGC members are an affinity group with shared goals and practices who are encouraged to share the knowledge they gain on their journey of self-improvement. For most players, learning with players of a similar skill level, from players of higher skill level, and teaching what they learn as they learn it to even more fledgling players are all part of the process of engaging in this recursive hobby. Tutorials and in-game practice scenarios can offer the player only knowledge of

the game's systems and mechanics, but to have a complete understanding of how to play, they must also participate (even passively) in collaborative learning spaces. Like many competitive game genres, the amount of information to absorb in fighting games is terrifically abundant, but with the assistance of others through user-generated learning materials and social participation, the process becomes significantly less daunting.

There are many other ways that Gee's principles of learning can be observed as being active in fighting games, as well as many ways in which fighting games complicate our understanding of how such learning takes place within systems that are more dynamic than the single-player games that Gee focuses on. The ways in which the FGC collaborates are so central to how learning takes place, that the next section of this thesis focuses exclusively on this domain.

COLLABORATIVE LEARNING IN A COMPLEX DOMAIN

Gee's learning principles were derived from looking closely at an individual's experiences in a game system, but much of the learning in the FGC is collaborative. Along the journey to becoming a competent player of fighting games and further participating in the community, FGC members may begin to engage with content on social media platforms. Video sharing sites like YouTube, microblogging platforms like Twitter, and forums like Reddit allow users to effectively "show their work" in playing and learning fighting games, as well as talk to each other about the games they play. Players discuss fighting games in ways that are similar to how athletes discuss physical sports like baseball, soccer, and basketball, recording and sharing their exploits with others who engage in the same pastimes. Members of either of these affinity groups can communicate using the jargon of their shared interest, and are even encouraged by the feedback that certain types of content receive. Participants get a good idea for what is "skilled," "cool," or "funny" in their community, and they want to participate in it, regardless of scale. Those teenagers on a basketball court fooling around to test their maximum free-throw distance have their FGC surrogate in the form of players on the internet sharing a video of them winning using only a single attack, or losing in such an uncommon manner as to be considered a spectacle.

Players discover strategies, information, and queries in fighting games in varied ways, but they all contribute to a larger ecological understanding of the games they play. Consider the following player profiles: A player might already have an incredibly high-level understanding of the mechanics and characters of a game they play, to the point where simply reading a

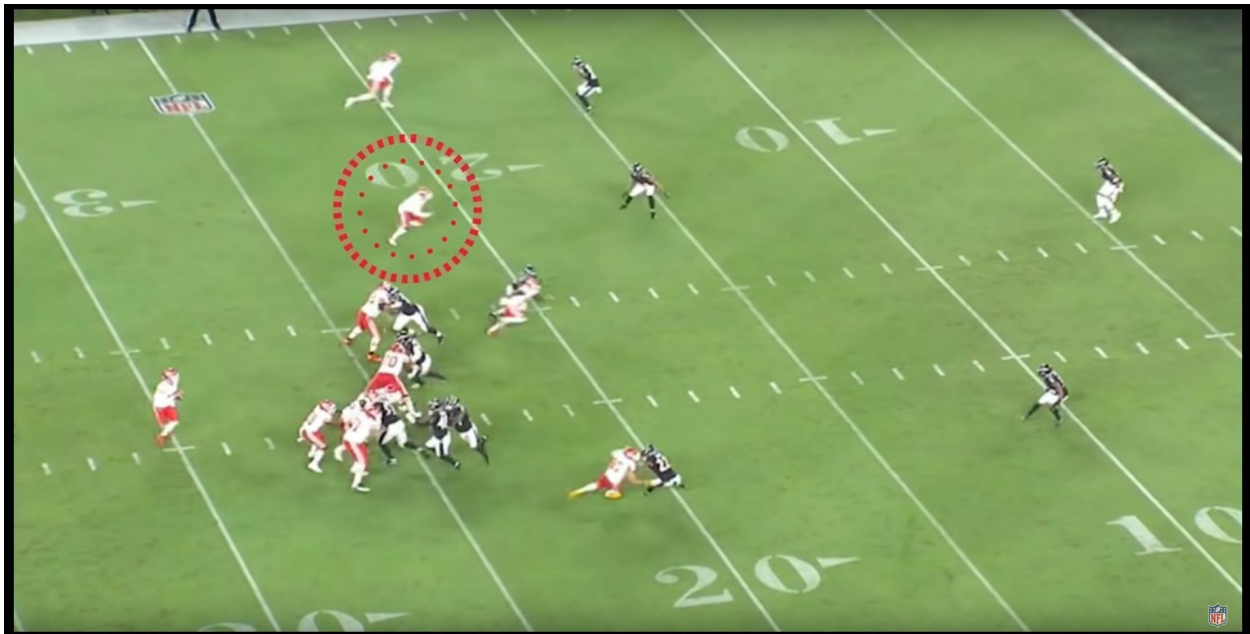
description of what a move does is enough to come up with a strategy, and so they record and share their strategy for others to benefit from. Another player may not be the best at executing difficult combinations, but understands the math behind the system in a theoretical sense. They will record a video explaining their concept for combat strategy and share it for others with more experience to attempt. A third player might understand little of the system, but have figured out something interesting through experimentation. Still, they record their screen, and send it off to social media asking for clarification from kindhearted strangers. A fourth (and final for this example) player may perform something accidentally, and upon sight say "what on earth was that?" Regardless, they record the clip and send it to the world. No matter how the information comes to be, it does not change the fact that members of the affinity group will have a high chance of seeing it in one of the spaces shared by others of the same affinity group, whether that be a web forum, a social media platform, or a space provided by the developers in-game. Players use the same techniques to create these paratexts as they might in other areas of their lives, acting as both producers and consumers of media.

The instructional paratexts that gamers create are similar to, and share some of the same semiotic-based principles as, those created for other competitive activities. In physical sports, for instance, players of all skill levels take interest in the skillful execution of play, using technologies such as slow-motion instant replays to access and evaluate player choices. In both physical sports and video games, close inspection of individual choices has value, whether it be for analysis or as spectacle. One approach useful in this analysis is the "play breakdown," where a recording of a specific moment is dissected with video editing to facilitate the discussion of

exactly why and how players executed their plan. The National Football League (NFL) often uploads these edited breakdowns on sites such as Youtube, with embedded commentary from community figureheads who are usually retired players, coaches, or professional commentators after airing them on television (see Figure 4).

Figure 4

Screenshot of NFL Network “Baldy Breakdowns”



Note. Supplemental visual aids are superimposed on game footage (NFL, 2020)

Where American football has notable players and influencers like Brian “Baldy” Baldinger who lend their expertise when sharing such content, fighting gamers look to community figureheads like Stephen “Sajam” Lyon or Brian “Brian_F” Foster for in-depth analysis of video game content. The methods by which community members produce this type of

content mirrors physical sports in many cases. “Play breakdowns,” focusing on exactly why, where, and how players can execute a strategy to defeat their opponent are one example of many. A well-known content-creator in the FGC known commonly as “HiFight” creates videos that break down, step-by-step and moment to moment, the decisions made by either player in replays that facilitate learning, posting videos with similar superimposition techniques as the examples above, but over professional fighting game tournament footage to provide insight in their #JustFrameBreakdown series (see Figure 5).

Figure 5

Screenshot of video where FGC content creator “HiFight” has superimposed information onto video footage of a professional fighting game tournament to facilitate viewer understanding of the results of player choices.



Note. (“HiFight”, 2021)

When one searches “street fighter tutorial” on YouTube, one does not see a recording of the latest *Street Fighter* title’s in-game tutorial; rather, the results are dominated by paratexts created by involved community members where they analyze video game footage, provide tips for completing difficult challenges, or explain technical concepts important to game ecologies (see Figure 6).

Figure 6

Screenshot of YouTube's search results for "Street Fighter Tutorial"

The screenshot displays four video results for the search query "Street Fighter Tutorial".

- Result 1:** "The Beginner's guide to Street Fighter V: Champion Edition" by rooflemonger. It has 224K views and was posted 1 year ago. The video is 42:26 long and includes a chapter list: Intro | Basics | Meters | V-skills | Throws and Shimmies | The Neutral | Anti airs | Crush Counters | ...
- Result 2:** "How To Play Street Fighter Like a Pro | Game/Show | PBS Digital Studios" by PBS Game/Show. It has 80K views and was posted 6 years ago. The video is 5:59 long.
- Result 3:** "Beyond Technical: Tutorial for Street Fighter beginners." by Cross Counter TV. It has 366K views and was posted 8 years ago. The video is 15:17 long.
- Result 4:** "Street Fighter 30th Anniversary Collection Tips and Tricks For Beginners & Noobs" by URBAN GAMEPLAY. It has 48K views and was posted 3 years ago.

Creation of such instructional paratexts demonstrates that FGC members are willing to assist others in learning to play, just as they did in the arcades, but with the massive additional benefit of an information-based social economy enabled by the internet. Social media, wikis, and other varied discourse communities ensure that players who are involved in fighting games have no shortage of information about their favorite games available at their fingertips, and enable content creators to receive recognition for their contributions to the community.

Learning from these paratexts require familiarity with specialized terminology, especially since the FGC is a global community incorporating members who speak numerous languages. Members often communicate information about the game interface and player actions using notation systems in which shorthand terms and easily reproduced icons present information in abbreviated, easily archived, and speedily digestible formats. One of these notation systems—called “numpad notation”—has been widely adopted across most FGC spaces, as well as among fighting game players in countries from Mexico to Japan, as the primary method of inscribing, explaining, or otherwise discussing specific inputs in fighting games. Numpad notation and its origins are defined on Dustloop wiki (2022) (one of the most popular collaborative information repositories about fighting games) as “a system for writing the inputs used in fighting games in an easy-to-read, easy-to-understand, and language agnostic way. The core mechanic of numpad notation is also how it gets its name: numbers are used in place of directions, according to their position on a keyboard's numpad” (see Figure 7). Learning such notation systems is an important aspect of both being able to benefit from existing content created by the FGC, as well as being able to contribute to this storehouse of knowledge.

Figure 7

Numpad notation used globally to denote complex inputs simply



Some players may still describe a move's inputs by the official names listed in-game, or less truncated terms like “quarter-circle punch” but most will write the same input ($\downarrow \swarrow \rightarrow$ [punch]) as “236P” under numpad notation. Language agnostic is an apt descriptor for this approach, which uses the most basic system of keystrokes to communicate a series of moves, allowing members to avoid dealing with images, for instance, when doing so is not convenient.

In addition to systems such as numpad notation, players who want to consume or create paratextual content need to learn terminology that pertains to specific permutations of fighting game systems. Looking back at figure 5, the terms “air reset” and “st.LK” may make little sense

to those outside the FGC, but they are examples of the specialized language that appears in fighting game tutorials created by FGC members. Some of the terms are intuitively approachable, like “reset,” which refers to a situation in which a player stops attacking purposefully to create an ambiguous state of disadvantage for their opponent, effectively “resetting” the opponent’s position from being hit to a standing position. When terms are not derived from descriptors, they are instead named for their discoverer, the region where they were discovered, a joke, or a title reference. Decades of emergent discoveries in gameplay (much of it transferred by word-of-mouth) have led to an abundance of terminology. The exigence for a place to keep track of globally recognized terms was not left unattended for long, as long-time fighting game enthusiast and content-creator Ricky “Infil” Pusch collaboratively collected every colloquialism in a website simply titled “The Fighting Game Glossary” (Pusch, 2021). The glossary contains a diverse amount of information in multiple languages and was designed with web-integration in mind, allowing even for the glossary’s terms to be embedded into web services like Twitch, a gaming-focused live streaming platform.

Becoming a member of a community means more than familiarity with terminology, however; it means adopting beliefs and values esteemed by that community as well. These beliefs range from the idea that an archetype or character is unscrupulous to play to the idea that a certain strategy is worthy of more or less respect than others. It is common, for example, for players of the video game *Team Fortress II* to denigrate the “pyro” character (and, thus, those who choose to play that character) by referring to its play style as “wm1,” which is shorthand for simply pressing the “w” key to move forward while also pressing the main mouse button (“m1”)

to attack. This play style is commonly looked down upon and is often associated with players who haven't mastered more sophisticated play styles as well as players who simply want easy kills. Players collectively assess situations, characters, events, or mechanics based on their prior experiences or imagining themselves to be in similar play situations, resulting in connotatively charged terms (positively or negatively), stereotypes tied to game mechanics, and idealized feelings about the way games should be played.

One of the most pervasive examples in the FGC of a practice that is highly valued is an idea that originated early on in arcades is the concept of "footsies." Pulling the definition from Infil's fighting game glossary, footsies is "a complicated, often nebulous term that refers to the battle for controlling the space in front of you, often by using good pokes. In essence, you are trying to get to a range you like, while trying to deny your opponent getting to a range that they like" (The Fighting Game Glossary, 2021). A strategy built upon footsies is an honorable and honest one, and the idea of such play is hallowed in the FGC. Conversely, there are also strategies that are deemed "cheap" or "degenerate." A cheap strategy can be considered inexpensive. As the term suggests, there is little risk, but immense reward for the player utilizing a cheap strategy.

One of the most notorious examples of a strategy that is highly controversial is the Super *Smash Bros. Melee* (2001) technique known as "wobbling," named after the player Robert "Wobbles" Wright. This technique takes advantage of unique mechanical interactions for the character Ice Climbers, two siblings controlled by the player at once. While the characters usually act in tandem, it is possible under the right circumstances to de-synchronize them and

control them independently. This possibility allows for situations where the two characters can be controlled precisely to attack in an alternating rhythmic pattern, entirely preventing the other player from completing any action until they inevitably lose. The efficacy of this strategy—a staggering advantage when performed correctly, and a victory if used to take the opponents final life—sparked debate amongst the *Super Smash Bros.* community about the fairness of such strategies. Being identified as one who uses such unfair strategies can mark that individual as being outside the community, as Todd Harper (2013) points out:

I'm not quite sure how, but I managed to beat [a local teen], and believe me when I tell you, it had to have been a fluke. I remember watching him turn to me with a frustrated expression, saying in an exasperated tone, "Oh, usin' cheesy throws!" I also recall not understanding what he was talking about.... (p. 1)

Cheap, degenerate, or "cheesy" strategies take on the meaning of gameplay patterns that are harmful to the play experience, which influences what and how people learn to play. Wobbling is one situation where it is largely considered unscrupulous and harmful to the development of *Super Smash Bros. Melee's* competitive environment. Interestingly, concerns centered around the idea that players would be discouraged to compete or that the number of spectators to online tournament streams would largely decrease if an Ice Climbers player known to wobble was in the tournament, hinting that competitive integrity and the health of the scene is dependent on active and interested participants using strategies that are at least possible to counter. Prominent competitors with large followings broadcasted their opinions about the use of wobbling, effectively creating a movement that had large scale effects on the rulesets implemented in *Super*

Smash Bros. Melee tournament organization. Professional player Jeffrey “Axe” Williamson (2018) tweeted:

Wobbling needs to be banned. I've said this for years. It's pretty terrible for the integrity of competitive *Melee*. Near 0 risk, easy execution, 0 defense options. I was surprised when it was legalized again, with people just saying ‘well, IC's aren't winning anything anyway’.

Due to concerns like these, and the outspokenness of a great deal of spectators and players, many tournaments outright banned the use of the technique or otherwise limited its use by way of enforcing disqualification if the damage inflicted surpassed a certain value or placing a time limit on how long one was permitted to perform the infinite combination attack. Wobbling is one example of emergent gameplay and emergent behavior in the spaces surrounding fighting games that also shows the importance of the shared values among community members, and the degree to which membership requires not just specialized knowledge, but a shared sense of ethics. If using certain attacks or strategies are socially discouraged, players may avoid using them entirely, which is counter-intuitive to the goal of fighting games, which is to defeat the opponent in front of them using their character’s available tools. But this is just further proof that video game experiences can teach much beyond their content or controls. As entry points to both an activity and a community, we have seen how they serve as the basis for learning everything from problem solving to semiotic domains to value systems.

TAKING ON TUTORIALS

“The answer [to lessening the barrier for entry] is not tutorials. Nobody wants to sit there playing a tutorial. They are demoralizing, demeaning, and not interesting.”

- Stephen “Mortdog” Mortimer,

Lead Game Director for Riot Games’ *Teamfight Tactics*

The words “demoralizing” and “demeaning” are not ones a developer wants to hear when someone describes the learning interfaces of their games. And while not all game design professionals use such strong language to describe them, a distaste for tutorials is not uncommon. Matthew White (2014) acknowledges this aversion as a widely held attitude toward tutorials when he writes: “I hope throughout the book you have disabused yourself of the myth that all tutorials are mandatory, unskippable, torturous exercises in misery” (p. 125). Other designers admit the presence of these attitudes toward tutorials when they present ways to avoid the negative impact of tutorials on the player experience. For example, Masahiro Sakurai—the game director behind the *Kirby* and *Super Smash Bros.* series, and creator of a number of short videos highlighting elements of game design, provides this caution and counsel: “Tutorials should be fun, too. Don’t make them obvious practice, but instead try to weave them more naturally into the main game” (2:26). If they are not fun, then tutorials weaken a company’s ability to do what Regina Bernhaupt (2015) claims is one “major goal for any game development [which] is to have a game that is fun to play” (1).

When they do appear in the fighting game genre, tutorials often take the form of a safe situation removed from the competitive exhibition matches that define the genre. For instance, a character may be shown attacking an inanimate object that cannot fight back. The player-character is thus not threatened in any way and, in fact, is run through a small “course” where they are asked to complete the actions displayed on the screen. I like to refer to this form of tutorial as a “control glossary” as the actions are often no more than simple instructions such as “press Up to jump” followed by a confirmation prompt that the player completed the action correctly. While control glossaries may teach the player how to control their character, they do not teach them when to use specific tools, why to use them, or any intricacies that may differentiate between characters. For example, a tutorial that teaches the player how to quickly run forwards may forgo the information that larger, lumbering characters do not have the option to run. By not showing the full range of actions that opponents may perform, such tutorials are simply postponing the real learning that it will take to face off against an opponent successfully.

While some fighting games have evolved to include specific, contextually dynamic information, it is done in a way that is not interactive. White calls designs lacking interaction the “flashcard”—an interface element that appears on screen carrying necessary information. He explains:

Realistically, the only thing that should ever appear on a flashcard in a game is the control scheme. The instructional strategy is didactic in that it spits information at the player with the hope that he or she will absorb it, but does not verify that any learning has taken place (p. 27).

White highlights flashcards' lack of feedback, and further claims that while strict memorization is fine for learning static domains like mathematics and chemistry, they do little to nothing for complex, nuanced subjects like interpreting medical symptoms or engineering for bridges (p. 27). The complexity of fighting game interactions suggests that they have limited application in these settings as well.

Tutorials also seem to be only used to exercise certain kinds of knowing. White, using the field of psychology's terms, divides the kinds of knowledge discussed above as leading to "crystallized" or "fluid" intelligence. Crystallized intelligence refers to information we learn as fact that we can then recall (White, 38). It's not abstract, and usually consists of information that could be argued is "data" as it is unchanging. A friend's birthday, the backstory of a character, or the measured time it takes for an attack to be executed all fall under "crystallized" learning. Fluid intelligence refers instead to the more abstract procedures and concepts we learn, like logic, reasoning, or calculation (38). According to White, the downside of many current video game tutorials is that many focus on crystallized information (i.e., control glossaries), without providing spaces for players to experiment and exercise their fluid knowledge, which is a required process to fully retain and apply the information.

Sometimes, tutorials do not even verify that the player's input resulted in the proper outcome. Small differences in execution such as timing make a significant difference in fighting games and can alter whether a player's choice even occurs in the first place. In the following screenshots from *The King of Fighters XV*'s tutorial mode, I perform the attack within the game's basic tutorial as instructed, but far too late for the character's leg to extend and threaten

anybody (see Figure 8). Instead, the character begins moving his leg, but the animation is cut off by touching the ground. The game sees no difference between this outcome and the character kicking his opponent to the ground in its tutorial. The issue is one of timing that is being assessed by the backend system looking for programmed criteria such as whether the player character is airborne and whether the player character pressed the correct input, but has no measures in place to check if the player successfully *struck* the opponent. Small adjustments could be made to the control glossary formula to improve learning based on appropriate feedback with a “COMPLETE” prompt upon properly executing the command within a context in which the goal of striking one’s opponent occurs. Otherwise, such tutorials can improperly reinforce choices that would lead to failure in an actual competition.

Figure 8

Screenshots of The King of Fighter XV’s tutorial modes



Note. The player character prepares to extend his leg for a kick...



Note. ...and lands before he can extend his leg. The task is marked complete in this tutorial despite neither the attack being fully executed nor striking the dummy character.

Rather than basing completion solely on the player's input, the tutorial could base completion upon a combination of criteria that more closely mirrors a real PvP interaction, such as the following sequence:

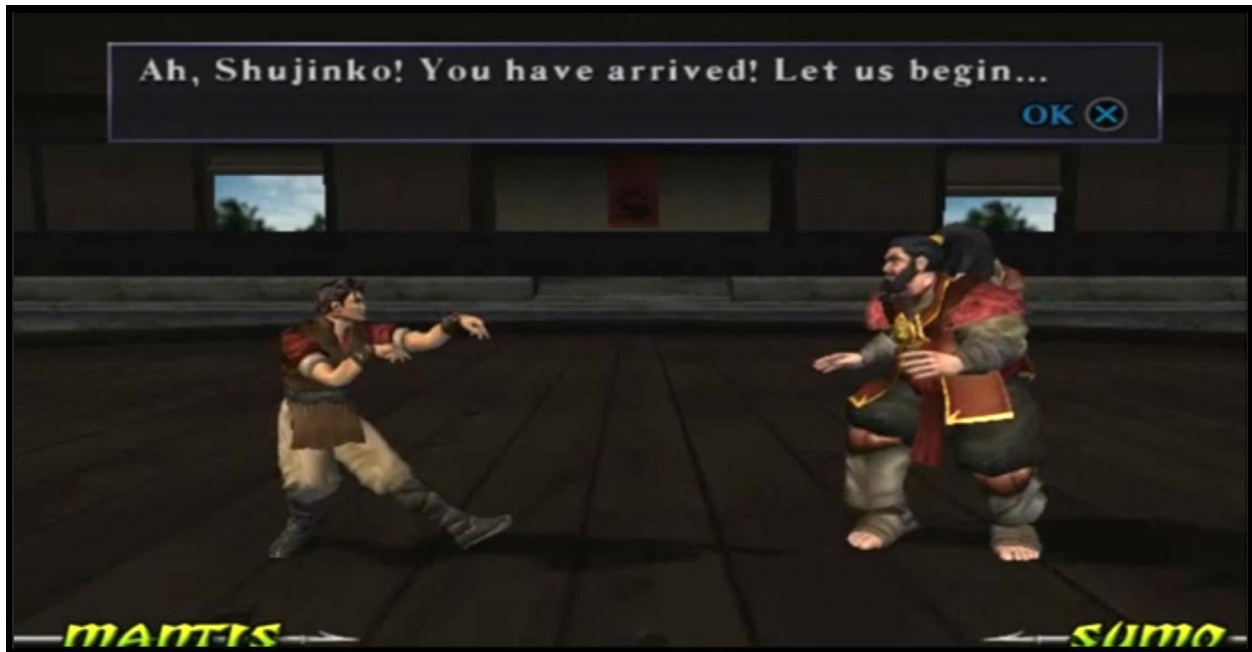
- (1) Player 1 is airborne
- (2) Player 1 presses Heavy Punch and Heavy Kick Simultaneously
- (3) Player 2 is in a post-hit state
- (4) Player 2 cannot act.
- (5) Player 2 takes exactly 80 damage.

By creating criteria based around a common specific game state, players would only receive positive feedback upon completing an action correctly; this would enhance learning potential by more directly embodying Gee's Concentrated Sample, Discovery, and Bottom-up Basic Skills principles.

Tutorials could also take advantage of Gee's identity-based learning principles by better accommodating player interest in customizing one's experience in the game world itself. If we look to past fighting games, narrativization is rarely used as a tutorial implementation, instead featuring tutorials closer to White's examples, like an optional tutorial level or flashcards. When fighting games do feature a narrative, they are typically separate from the onboarding experience. However, Netherrealm studios' *Mortal Kombat Deception* (2004) is a stand-out exception. The single player campaign mode (called Konquest) has the player embody a new character to the series named Shujinko. In most fighting games, the player is selecting from a repertoire of characters with fully established backstories and abilities, but Shujinko was more or less a blank slate whose abilities were customizable based on narrative events such as which *Mortal Kombat* characters were selected as mentors or which factions Shujinko sides with. Playing as a character like Shujinko who needs introduction as a new character meant the protagonist's narrativization and the tutorial could happen simultaneously. The way Netherrealm chose to iterate that idea was by making the tutorial for the "Konquest" mode of the game Shujinko's martial arts training as an adolescent before he matures into the character that the player embodies for most of the game. Another well-known character, Bo Rai Cho, instructs Shujinko and the player in tandem (see Figure 9).

Figure 9

Player character Shujinko and virtual instructor Bo Rai Cho in Mortal Kombat: Deception



This design choice heeds Sakurai’s call mentioned earlier “to weave [tutorials] more naturally into the main game” while also emphasizing the role of player choice in the complexity of action in the game world (since possible fighting styles are dynamic based on the choices the player makes). Both effects situate learning as an ongoing and active process that is more than just a one-off control glossary that a player must pass through to get to the real game. While the lead-in to the tutorial is a massive step in the right direction to welcoming new players, the gameplay structure within the tutorial still only lists commands for controls in “flashcard” format in an environment that is entirely safe, offering little opportunity for just-in-time application and no examples of how to use the techniques when in a combat situation, thus limiting the potential

for learning in a mode that would be valued by members of the FGC because it prepares one for the emergent play that is central to competitive play.

CONCLUSION

Throughout this thesis, it has been shown that fighting games share some of the characteristics that game scholars have identified as being central to players' ability to learn within video game ecologies. These ecologies present opportunities for players to build on prior and intuitive knowledge, to customize interfaces and experiment with control schemes, and to collaborate and share their hard-won knowledge with others. But we've also seen that fighting games' focus on emergent gameplay, their lack of gradual narrative progress and character development, and their poorly designed tutorials may discourage player engagement and learning, especially as these games have moved away from the arcade ideal of f2f competition (more often found nowadays at large-scale events), leaving players dependent more on online paratexts to understand the dynamics of these competitive games.

Different learning strategies are required of players in this new ecosystem, including a higher dependence on meta-knowledge about hidden game mechanics and technological processes. Knowing that an opponent values "footsies" or other honorable play and exploiting their expectations to move towards victory encapsulates "how a game interfaces beyond itself," the definition of metagaming presented by Boluk and LeMieux (14). Such trends draw attention perhaps to the need for designers to adopt different strategies as well and to reconsider the role of tutorials in such games, or risk creating systems that frustrate users and discourage learning. There is a split between players who attempt to begin learning fighting games on their own, and players who begin via avenues adjacent to the FGC. Because of the existence of players who might purchase a fighting game but never find an entryway to the paratextual materials produced

by the FGC, the games should be products worth playing on their own. As fighting games improve, more players will appreciate the games, and naturally communicate with other like-minded players as they play more.

Alternatively, game designers can adopt models of learning like that found in the game *Guilty Gear: Strive* (2021), which implemented a feature six months after the game's release called "Combo Maker" in a free title update (arcsystemworks, 2021). This tool allows players to document and upload techniques to a shared repository accessible by all players (which can be filtered by character, by type of technique, or by specific players). It includes interface elements to annotate input recordings, set up exam-style trials for other players, and vote with a social media-like approval system, as well. These annotated recordings are then available through the game interface itself, not merely found externally in gaming community repositories. A feature like this perfectly addresses the common issue of stagnant tutorials in fighting games in the face of constant game updates and emergent gameplay. The hope for fighting game fans is that other game developers will follow the lead of Arc System Works and emulate features like this to facilitate a stronger base of competitors (and less confused or frustrated fighting game enthusiasts in general). Features like this as well as many features present in the upcoming title *Street Fighter 6* leave me hopeful that the future is bright for fighting games.

The recursive nature of product design across a semiotic domain is readily apparent in fighting games. Each new title takes inspiration from others or attempts to make up for the shortcomings of other titles that were broadcast by members of the affinity group. This is not an exclusive feature of the genre, but perhaps has more clear examples than one might expect. In

attempting to address the lack of just-in-time learning in fighting games, *Street Fighter 6* has a never-before-seen live-commentary feature, which uses dynamically changing voice lines recorded by real-life professional commentators to inform the player as though they were a spectator in-real time. Capcom's choice to use well-known personalities for this feature also serves the multi-faceted function of creatively bringing professional e-sports into the gameplay space, centering community values, and enhancing just-in-time learning opportunities for new players. When considering Gee's Concentrated Sample Principle and Just-in-Time Principle initially, I lamented that fighting games took a "bookish" approach by keeping learning material separate from gameplay, making it difficult for newer players to grasp what choices they *should* be making in a match. But hearing the professional fighting game commentator Steven "Tasty Steve" Scott exclaim something like "OOH! A fantastic anti-air! Their turn now! How will they keep up the pressure?" offers direct guidance to a new player in the moment, and in a way that strikes spectators as entertaining, but can be safely ignored (or be disabled individually in settings) by skilled players to no detriment.

Though fighting games are often limited by the need for a synchronous game state, *Street Fighter 6* will allow for players to manage their game settings client-side—their settings are stored to their console/machine, and do not impact the other player in online matches, including aesthetic choices like background music and the chosen arena (scenes and backdrops for battles). The only elements that are kept synchronous across an online match are the characters and their resources (life, special ability meters, and other information important for forming strategies). Continuing the trend of new critical-learning focused features, *Street Fighter 6* previews have

demonstrated beginner-friendly training mode options, such as pre-set drills for some of the most common situations a player is likely to encounter. Examples include jumping to avoid projectiles, drills for dealing with different approaches by the opponent, or blocking tricky attacks. To access these scenarios, a player only needs to select training mode, pause the game, and select the scenario they want to drill from a drop-down menu. This option adheres to interface conventions found on most websites and addresses the unintuitive learning issue of needing to understand the *opponent's* character to practice against it.

Fighting games are a niche genre in a world where video gaming grows more pervasive by the day. Anything that brings more people to them is a step forward, and changes like those present in *Guilty Gear: Strive* and the projected changes to learning avenues in the upcoming *Street Fighter 6* point towards a world where we can embody the arcade closely once more, growing together and finding fun—not frustration—in these complex games.

Ultimately, a lack of learnability ends up making a game less approachable, and I believe there to be value in a future where learning materials in fighting games lean into the existing ecology of learning in fighting games, such as with *Guilty Gear Strive's* Combo Maker tool. As Desuivre and Wiberg (2015) state in their chapter of *Game User Experience Evaluation*, “The focus is no longer only on hardcore gamers. There is a distinct shift towards a world where the general player is an inexperienced gamer” (171). Communities with enough of a legacy behind them will spend the effort to ensure their legacy does not fade, helping along newer members of the community and imparting the wisdom (and follies) of their predecessors. In fighting games, members new and old will likely continue to be participants in this renaissance. We can only

hope that fighting game developers embrace both their legacy and the modern communities they aim to entertain and attempt to implement features into their games that both onboard and provide players with spaces in which they can learn in manners closer to other genres of game. Luckily, some games have started to take steps that signify progress in this regard.

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