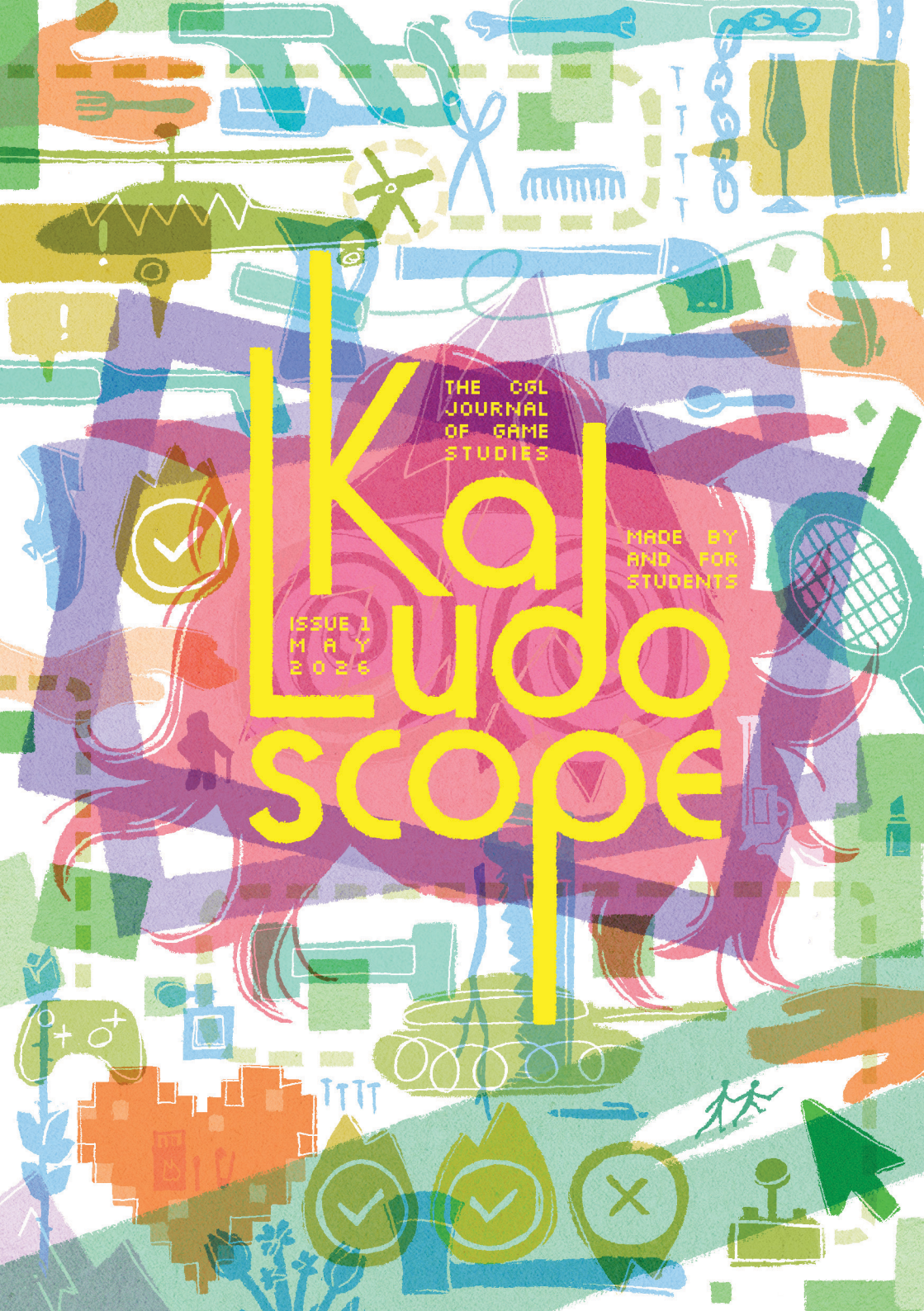
THE CGL JOURNAL OF GAME STUDIES
Kaludoscope
MADE BY AND FOR STUDENTS
ISSUE 1
MAY 2026

KALUDOSCOPE

THE CGL JOURNAL OF GAME STUDIES

Kaludoscope is a student-led journal of game studies that offers a welcoming space for students and emerging scholars of the Cologne Game Lab to share their research and gain experience in the editorial and peer-review process. We aim to promote the interdisciplinary kaleidoscope of groundbreaking work around games and play stemming from the CGL community.

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ACKNOWLEDGEMENTS

We thank all those who supported us in creating this journal and in our academic journeys more broadly. Specifically our mentors at the Cologne Game Lab: André Czauderna, Sonia Fizek and Laura Frings.

Kai Jaeschke thanks his parents, Angelika und Peter, as well as his brother Carsten.

Marie Taeger thanks her parents, Freia and Jürgen for all the doors they have opened for her and Sebastian Viehhauser for the constant support.

Shimshon Schneider Jeselsohn would like to thank his father Jorge Schneider for always believing in him.

OVERVIEW

TO THE LUDO SCOOP

EDITORIAL — VOLUME 1, ISSUE 1, MAY 2026

EVERY GAME BEGINS WITH AN INVITATION TO JOIN THE MAGIC CIRCLE, LOOK AROUND, STEP INSIDE, AND PLAY.

With this inaugural issue of *Kaludoscope*, we extend our own invitation — to all thinkers, players, and makers of CGL — to step into a space where games and play become objects of critical inquiry, cultural reflection, and creative thought.

The title of this journal is no accident - a portmanteau of kaleidoscope and ludus.
A Kaleidoscope does not impose a single image; it refracts light through many surfaces at once, producing patterns that shift with every turn. That is the kind of intellectual culture we hope to cultivate with reference to ludic forms. For as diverse practices, games and play deserve to be examined from multiple angles — historical and theoretical, personal and political, aesthetic and ethical. With this first issue, we open a conversation — one that we hope will grow with each edition to come.

Kaludoscope is a student-led journal rooted in the community of the Cologne Game Lab. It was born out of a simple conviction: that students and emerging scholars have something urgent to say, and that they deserve a platform to share their most groundbreaking ideas. It is our hope that reading about a great diversity of thoughts and interests and finding a variety of approaches to game research can inspire newcomers to CGL to learn about games in ways that they may not have realized they could.

This first issue represents the breadth of perspectives we hope will define *Kaludoscope* going forward. The pieces gathered here span topics around game design and culture, from the analysis of individual designs through a more general examination of the industry and culture to an outlook into what games can be and do in the future. On the following pages you will find essays created by MA students of Digital Games in their second semester during the summer semester 2025 for the Media and Game Studies Colloquium.

We are grateful to all those who helped bring this journal into being, and we look forward to the conversation ahead. Join us on this journey through the refracted worlds of play, discovery, and critical reflection.

YOUR EDITORIAL TEAM,
MARIE TAEGER
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CULTURAL HORROR IN JAPANESE VIDEO GAMES: FROM LOCAL FOLKLORE TO GLOBAL RECOGNITION

BY
ALPTUĞ
ÇAVUŞ

Horror is one of the oldest narrative forms used by humans to explore fear, morality, and the unknown. In the world of video games, horror has grown into a diverse genre with roots in both Western and Eastern traditions. Over the last few decades, Japanese horror, commonly referred to as J-Horror, has developed a distinct voice that has influenced not only regional audiences but also global players and creators.

In this essay, I will explore how J-Horror games came to be recognized internationally. I will start with the early days of horror games and trace how Japanese developers entered the scene. I will then discuss the cultural exchange between Japan and the West, showing how J-Horror both influenced and was shaped by global audiences. Finally, I will focus on two significant examples, *Fatal Frame* and *Siren*, which remain firmly rooted in Japanese cultural traditions despite global market pressures. I will explain the cultural references used in the examples, then I will continue with the Western reception of the Japanese horror games, their financial success on Western markets and their impact on Western game developers with examples.

This essay asks: how does a culturally and historically rich island nation like Japan integrate its unique traditions and aesthetic sensibilities into horror video games, how are these culturally specific elements perceived by international audiences and how cultural deodorization affects the success of Japanese game titles?

HOW J-HORROR GAMES BECAME RECOGNIZABLE

Horror games, like many gaming genres, have humble origins. One of the earliest examples is an American game, *Haunted House*, released in 1981 for the Atari 2600. *Haunted House* was a top-down adventure game in which players navigated through a dark mansion, collecting pieces of an urn while avoiding bats, ghosts, and spiders. Its mechanics were simple by today's standards, but it laid foundational ideas for atmospheric design and the tension between safety and threat that defines the horror genre. Although primitive, *Haunted House* introduced the concept that games could evoke fear, even with limited technology and rudimentary visuals.

While the Western market saw some early experiments in horror, Japan entered the genre a few years later with *Sweet Home*, released in 1989 for the Nintendo Famicom. *Sweet Home* was based on a Japanese horror film of the same name and followed a team exploring a haunted mansion. Players managed health, used items, and uncovered a dark narrative about curses and vengeful spirits. *Sweet Home* pioneered several features that would later become staples in survival horror, such as inventory management, permadeath for characters, and atmospheric storytelling. Despite its innovative mechanics, *Sweet Home* remained relatively obscure outside Japan due to limited localization and the cultural context unfamiliar to Western audiences. At that time, Japanese games were not widely recognized as distinct horror experiences. Many were localized with significant changes or simply did not reach Western markets because they were "too Japanese" (Ramírez-Moreno, 2019, p. 54).

During the mid-1990s, two major franchises emerged from Japan that would redefine horror gaming: *Resident Evil* and *Silent Hill*, and they became globally successful. Part of the reason for this success, as Carlos Ramírez-Moreno discusses, was the phenomenon known as deodorization.

DEODORIZATION REFERS TO THE PROCESS OF STRIPPING AWAY CULTURALLY SPECIFIC DETAILS TO MAKE MEDIA MORE UNIVERSALLY ACCESSIBLE AND MARKETABLE.

In the context of games, this often meant altering story elements, visuals, and even mechanics that might be too foreign or confusing to Western players (Ramírez-Moreno, 2019, p. 54). Japanese horror titles faced the challenge of preserving cultural authenticity while trying to succeed internationally. These titles were carefully designed to meet Western expectations. *Resident Evil* focused on zombies, bioweapons, and survival in claustrophobic environments. *Silent Hill* took a different path, borrowing narrative and stylistic elements reminiscent of American authors like Stephen King and H. P. Lovecraft, crafting a story set in a small American town called Silent Hill (located in Maine, New England, which is the most used location in Stephen King's novels), haunted by secrets and supernatural forces with American characters (Ramírez-Moreno, 2019, p. 57).

J-HORROR AND GLOBAL UNDERSTANDING

The success of Japanese horror games inevitably led to cultural exchange between Japan and the West. As Japanese developers sought global markets, they faced decisions about how much of their local culture to retain and how much to adapt for broader audiences. Two franchises illustrate this tension particularly well: *Silent Hill* and *Resident Evil*.

To give it more context on these two series and western adaptation and reception of them: *Silent Hill*, although developed by a Japanese team, was crafted to feel distinctly Western. The games are set in fictional American towns and draw inspiration from American Gothic literature and the works of Stephen King. The story of the first *Silent Hill* game follows Harry Mason, an outsider searching for his missing daughter in a town shrouded in fog and secrecy. The town's horrors are not merely physical monsters but psychological manifestations of guilt and trauma. Christophe Gans, the director of the 2006 film adaptation, worked closely with Akira Yamaoka, *Silent Hill*'s sound designer, to preserve the game's haunting atmosphere while making it accessible to a Western film audience (Marak, 2012, pp. 265–266). The movie was not a massive box office success but achieved a degree of financial success with $100.6 million gross. However, the movie was criticized by the dedicated fans of *Silent Hill* for not catching the deeper meaning of the themes, creatures from the original series, and being too superficial with them.

Resident Evil embraced a more explicitly Western horror aesthetic from the start. The series revolves around bioweapons, viral outbreaks, and zombie hordes, aligning it more closely with Hollywood narratives like George A. Romero's zombie films. Its American settings, English-speaking protagonists, and focus on action made it an immediate success in Western markets (Pruett, 2010, pp. 2–3). *Resident Evil* also crossed over into Hollywood cinema. *Resident Evil*'s film series leaned heavily into action and spectacle rather than horror, ultimately becoming a major commercial success despite also diverging significantly from the games' storylines.

While Japanese horror had existed for centuries, its international recognition grew rapidly during the late 1990s and early 2000s. American audiences, familiar with slasher films and supernatural horror, became captivated by Japanese horror's atmospheric subtlety and emotional depth. This fascination led to a wave of American remakes of Japanese films. One of the most significant examples is *Ringu* (1998), adapted as *The Ring* (2002) in the United States. *The Ring* retained many elements of the original, including the iconic image of a long-haired female ghost emerging from a television, yet it adapted the story's cultural nuances to fit American settings and sensibilities (Marak, 2012, pp. 263–264). Interestingly, these adaptations sparked a two-way dialogue. While Western audiences absorbed Japanese horror aesthetics, Japanese creators became increasingly aware of global audiences' tastes. This awareness sometimes led to further hybridization or, conversely, a more deliberate preservation of cultural identity. Ultimately, even if some examples like *Silent Hill* and *Resident Evil* movies were not well welcomed by the dedicated fans, this cultural exchange has created a rich dialogue between East and West. While Japanese horror has influenced global media, it has also maintained its own identity, rooted in unique historical, religious, and social contexts.

CASE STUDIES

It is important to note that despite the increasing Westernization of Japanese horror games, some developers continued to create works deeply embedded in Japanese cultural heritage. Two standout examples are *Fatal Frame* and , both of which resisted the trend toward deodorization and remained committed to exploring horror through distinctly Japanese lenses.

FATAL FRAME

Fatal Frame, known as *Zero* in Japan, was released in 2001 by Tecmo. The game's premise is deceptively simple: players control a young woman named Miku Hinasaki, who enters the haunted Himuro Mansion in search of her missing brother. Inside, she discovers a realm filled with restless spirits, ritualistic violence, and a tragic past that refuses to stay buried. The central theme of *Fatal Frame* is "Onnen." "Onnen" is a Japanese term meaning "grudge" or "resentment," but it carries spiritual weight beyond its literal translation. In Japanese belief, Onnen is the idea that powerful emotions, especially those tied to injustice or sorrow, can linger after death and transform into spiritual energy. This energy can produce *Yūrei*, the spirit of a dead person that appears to people in the form it had when alive (Komatsu, 1997, p. 412).

Related to *Onnen*, there are two other concepts central to understanding *Fatal Frame: Reikon* and *Onryō*. *Reikon* is the general term for "spirit." When a person dies, *Reikon* leaves the body and enters a purgatory state until funeral rites are performed. If these rites are not properly conducted or if the person dies with strong negative emotions like vengeance, *Reikon* can become an *Onryō*, a specific kind of *Reikon*, which are vengeful spirits driven by *Onnen* (Pruett, 2010, p. 5). They are usually women who have suffered betrayal or violence, depicted in folklore with long black hair covering their faces and dressed in white burial kimonos, symbolizing both purity and mourning, walking on earth only with the same feeling state in their dying moment. In the game, *Reikons* are portrayed as red butterflies (which is also the main theme of the second installment of the series, *Fatal Frame II: Crimson Butterfly*) and the *Onryōs* are portrayed as the main threats and the primary objects of horror, as vengeful ghosts.

In *Fatal Frame*, spirits are part of a broader spiritual ecosystem, coexisting with humans rather than being entirely banished or destroyed. This reflects Shinto beliefs that everything in the world, including inanimate objects, possesses a soul or spiritual essence. In Shintoism, spirits, known as *kami*, inhabit rivers, mountains, rocks, and man-made structures. This animistic worldview underpins much of Japanese ghost lore, suggesting that disturbances in the natural or social order can awaken or attract spirits.

The connection between Shinto beliefs and ghost stories is profound. During the Edo period (1603–1868), ghost stories, or *Kaidan* (it means not only a ghost story but a strange one; it can also be a funny anecdote, however the term is generally used for ghost stories), flourished as a popular form of entertainment and moral instruction. The strict social hierarchy and emphasis on maintaining public harmony during this era created fertile ground for tales of private transgressions and supernatural retribution. These stories were performed in play form in Kabuki (musical), Noh (traditional), and Bunraku (puppet) theaters.

Fig. 1 Transforming bunraku puppet head (Edo-period tradition).

One of the most famous Edo-period ghost stories is *Banchō Sarayashiki*. The tale revolves around a servant woman named Okiku, who is falsely accused of breaking a precious plate and is thrown into a well by her master. After death, her spirit returns to count plates each night, stopping at nine and wailing over the missing tenth plate. This story embodies *Onnen*, as Okiku's soul cannot rest due to unresolved injustice. *Fatal Frame* draws directly from such traditions, featuring female ghosts who repeatedly enact moments of their traumatic deaths, trapped in cycles of grief and rage.

In *Fatal Frame*, the Camera Obscura (a phenomenon which was used to reflect images on a surface, which can be traced back to 400 BC, and a game mechanic based on taking photographs to ward off ghosts) is clearly inspired by the Japanese phenomenon of *Shinrei Shashin*, or spirit photographs, a practice and belief well documented in Japanese visual culture where ghostly figures are thought to appear in ordinary snapshots. It was widely known between 1994 and 1999, and its impact was felt until 2006 (Chalfen, 2008, pp. 52–54). As Chalfen explains, such photographs are frequently taken during family events, travel, or everyday life, only for faint human shapes or mysterious shadows to appear unexpectedly in the developed images, leading viewers to interpret them as supernatural evidence rather than mere technical flaws.

> SPIRIT PHOTOGRAPHS OCCUPY A UNIQUE SPACE IN JAPANESE CULTURE, STRADDLING ENTERTAINMENT, SUPERSTITION, AND PERSONAL NARRATIVE, WHERE PEOPLE SEEK MEANING OR EMOTIONAL CONNECTIONS TO DECEASED RELATIVES OR LOCAL TRAGEDIES.
>
> (CHALFEN, 2008, PP. 53–56).

The developers of *Fatal Frame* harnessed this cultural fascination, transforming the camera into a weapon that forces players to look directly at ghosts rather than flee, and echoing the way *Shinrei Shashin* invites viewers to confront the unseen. *Fatal Frame* embodies the idea that capturing a spirit's image can contain or weaken it, mirroring Japanese beliefs that photographs can hold spiritual power and serve as tools for exorcising lingering resentment or Onnen. Thus, the game's Camera Obscura is not merely a gameplay device but a digital extension of cultural practices where images become gateways to the spirit world, blending fear, ritual, and the human impulse to seek closure with the supernatural.

Fatal Frame stands out for its commitment to cultural authenticity. Rather than deodorizing its content for broader markets, it immerses players in a world where spiritual beliefs are not merely narrative devices but integral to the entire gaming experience.

Fig. 2 Example of shinrei shashin (spirit photograph).

SIREN

Siren, known as *Forbidden Siren* in the PAL region, was released in 2003 by Sony's Japan Studio. Directed by Keiichiro Toyama, the creator of the first *Silent Hill* game, *Siren* presents an intricate, culturally dense narrative set in the fictional village of Hanuda. The game weaves traditional folklore, religious symbolism, and contemporary anxieties into one of the most uniquely Japanese horror experiences in gaming. In *Siren*, Hanuda is a rural village hidden deep in the mountains. After a ritual meant to summon a deity goes horribly wrong, the town becomes engulfed in a red sea, and its residents transform into *Shibito*, meaning "corpse people." *Shibito* are not entirely dead but exist in a state between life and death, echoing the idea of spirits lingering in the physical world. They retain fragmented memories of their lives but are compelled to serve an ancient god.

At the heart of *Siren*'s horror is the cult religion practiced by Hanuda's villagers. This fictional faith borrows from various aspects of real-life esoteric practices and post-war religious movements in Japan. Following World War II, Japan experienced a proliferation of new religious movements, known as *Shinshūkyō*, which offered hope and meaning in a time of national trauma and rapid modernization. However, these groups often became subjects of suspicion and fear, especially after high-profile incidents like the 1995 Tokyo subway sarin attack carried out by the Aum Shinrikyo cult (Ramírez-Moreno, 2019, pp. 60–61). *Siren* channels these fears, depicting a village whose social cohesion masks secret rituals and monstrous transformations. The villagers' devotion becomes a sinister force, blending communal loyalty with horrific sacrifice.

CULTURAL DEODORIZATION

Among the mythological references in *Siren* is the story of *Yaobikuni*. In Japanese folklore, *Yaobikuni* was a legendary nun who gained immortality after accidentally eating the flesh of a mermaid. Although eternal life might seem a blessing, her story becomes tragic as she outlives everyone she loves and is condemned to wander Japan alone, burdened by loneliness and the memory of her unnatural existence. This legend finds a clear parallel in *Siren* through the character of a nun who consumes a creature known as the Skyfish, believed to be connected to the supernatural transformation occurring in Hanuda Village. Like *Yaobikuni*, the nun's consumption of a mystical being leads not to salvation but to spiritual corruption and entrapment in a cursed, timeless reality. The game thus weaves traditional folklore into its narrative, using the motif of forbidden consumption to explore themes of immortality, isolation, and the tragic consequences of contact with the supernatural (Pruett, 2010, p. 8).

Another cultural figure referenced in the game is *Hiruko*, a child born to the primordial Shinto deities Izanagi and Izanami (the equivalent of Adam and Eve in Shintoism). *Hiruko* was born without bones or proper limbs and was cast away to sea, eventually transforming into *Ebisu*, the god of fishermen and good fortune. In *Siren*, there were different beliefs before the foundation of the Mana religion (the main religion of Hanuda), and one of them was Shintoism. So, in the game the protagonist finds traces back to these religions, such as finding a shrine dedicated to *Hiruko*.

Siren also includes a nod to *Tsuchinoko*, a creature from Japanese folklore described as a short, thick snake with a central bulge in its body and the ability to speak or lie convincingly. Although there are several sightings reported, none of them were proven to be real, like Bigfoot or Loch Ness. *Tsuchinoko* has long held a place in regional legends as a mysterious and elusive being. In *Siren*, *Tsuchinoko* appears as an Easter egg, hidden in the game world in several places or levels such as the bathtub in the Satori Settlement (an area that disappeared during the earthquake because of a landslide) and later in a waterpipe of Karuwari (a land with rice fields on terraces), serving as a playful but culturally specific detail that connects the game further to Japanese folklore (Ramírez-Moreno, 2019, p. 60). Its inclusion highlights the developers' commitment to embedding local mythological elements into even the smallest aspects of the game, enriching the narrative world with uniquely Japanese references.

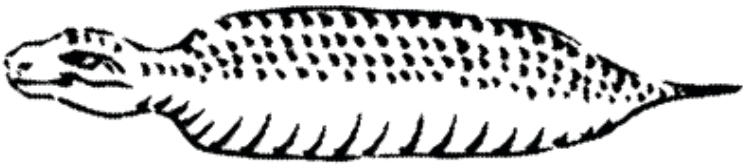

Fig. 3 Illustration of Tsuchinoko from Shinano Kishōroku (Ide Dōtei, c. 1834).

Siren remains a masterclass in how Japanese horror can merge folklore, social anxieties, and innovative gameplay into a cohesive, culturally rich experience.

WESTERN RECEPTION OF THE CASE STUDIES

When we consider how *Fatal Frame* and *Siren* fared in Western markets, the contrast in commercial success compared to *Resident Evil* and *Silent Hill* becomes starkly clear. As of April 2014, the *Fatal Frame* series had sold just over one million copies globally, a modest figure that falls far below major genre benchmarks. *Siren*, for which no official sales data is available, achieved cult status and received critical acclaim, but it remained a niche title. Both series are not producing any new titles today.

By contrast, *Resident Evil* and *Silent Hill* became mainstream successes, with multiple entries in both series earning "Greatest Hits" status. These franchises continue to shape the genre, with *Resident Evil* revitalizing the horror game industry and the series itself through its latest two entries (*Resident Evil Biohazard* and *Resident Evil Village*), while *Silent Hill*, though quieter in recent years, has regained attention through the newly released *Silent Hill 2* remake and the announced *Silent Hill F*.

In my view, while the lack of familiar tropes or effective cultural translation undoubtedly played a significant role in limiting the global appeal of *Fatal Frame* and *Siren*, it would be reductive to cite this as the only reason. *Resident Evil* and *Silent Hill*, although more culturally accessible, also featured strong narrative design, such as *Silent Hill 2* considered as a landmark in psychological storytelling in video games, groundbreaking visuals that mixed pre-rendered backgrounds and 3D models, and game design with tight gameplay loops and polished mechanics for the time they were released. These included well-balanced pacing, intuitive controls, and player feedback systems that enhanced immersion and playability. They were also highly regarded because of these very reasons.

The influence of J-Horror continues to resonate strongly in contemporary Western game design. The *Silent Hill* series, which has achieved cult status in modern times, remains a key point of reference for many developers. One clear homage appears in *Visage* (2020), developed by the Canadian studio SadSquare. The game's chained door scene directly references *Silent Hill 4: The Room* (2004), paying tribute to the game. Similarly, *Madison* (2022), developed by the American studio Bloodious Games, draws inspiration from *Fatal Frame*. Although the game was not as financially successful as *Silent Hill* or *Resident Evil*, this reference shows that it still serves as an homage to Japanese horror and is respected among Western game developers. Madison incorporates a similar camera mechanic that has been used for the first time in *Fatal Frame*, allowing players to confront and dispel spirits through photography.

Figs. 4-5 Visage (2020) Silent Hill 4: The Room (2004)

Both *Visage* and *Madison* also reflect the broader legacy of Japanese designer Hideo Kojima, whose cancelled *Silent Hills* project and its playable teaser *P.T.* (2014) profoundly influenced modern horror aesthetics. *P.T.* introduced a looping environment within a confined domestic space, using subtle environmental changes to convey its narrative and generate an escalating sense of dread, an innovation that has since become a defining feature of numerous contemporary horror games. Together, these examples demonstrate how the cultural and mechanical innovations of Japanese horror continue to shape Western interpretations of fear and spatial storytelling.

CONCLUSION

Japanese horror games exemplify how digital media can serve as cultural texts, preserving and transforming traditional beliefs and anxieties. From early titles like *Sweet Home* to global phenomena like *Resident Evil* and *Silent Hill*, the genre has evolved through a complex interplay of local identity and global appeal.

Yet even as many developers have adapted their works to meet Western expectations, games like *Fatal Frame* and *Siren* stand as reminders of Japan's unique cultural heritage. *Fatal Frame* draws directly from concepts like *Onnen*, *Reikon*, and the deeply rooted belief that spirits coexist with the living. Its inspirations from Edo-period ghost stories, such as *Banchō Sarayashiki*, connect modern players with centuries-old narratives of betrayal, sorrow, and spiritual unrest. Similarly, *Siren* merges folklore, religious symbolism, and post-war social anxieties into a haunting portrayal of a village consumed by its own secrets. Its references to figures like *Yaobikuni* and *Hiruko* show how traditional myths can be reimagined within new technological media while preserving their cultural significance.

As Japanese horror has entered the global stage, it has faced the challenge of deodorization, a process that threatens to strip away culturally specific elements for broader marketability. Yet the enduring popularity of games that remain deeply Japanese suggests there is a global appetite for culturally rooted storytelling. Horror, after all, may be universal, but the way it is told, and the fears it draws upon, remains profoundly shaped by culture. Even though *Siren* and *Fatal Frame* were not as commercially successful as the *Silent Hill* and *Resident Evil* series, they remain well-known and respected among Western developers and players. Although I come from a country that is geographically and culturally situated between Europe and Asia, the fact that I dedicate a big part of my essay about these games itself reflects their cross-cultural impact.

In my view, the Western-themed Japanese games helped J-Horror to reach global success, and it opened a whole new door and created a chance for Japanese game developers to use their culture in their games, make "too Japanese" games, and become successful with it. Also, the cultural exchange between Japan and the West has enriched the horror genre as a whole. It has produced works that are neither entirely Western nor purely Japanese but hybrids reflecting shared fears and diverse aesthetic traditions. As horror games continue to evolve, I believe similar dialogues between different cultures will remain crucial, offering new ways to explore fear, identity, and the mysteries that lie between the worlds of the living and the dead.

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IMAGE SOURCES

Fig. 1: Deki, K. (2019, May 7). *Bunraku puppet theater - How to watch Japan's traditional performing art.* MATCHA. https://matcha-jp.com/en/7181

Fig. 2: *Ghostmap.jp (Japanese paranormal/ghost-report database).* https://ghostmap.jp/photo/detail.php?cd=882

Fig. 3: Reproduced via Wikimedia Commons. https://commons.wikimedia.org/wiki/File:Doeti_Nozuchi.jpg

INTERACTIVITY AND ART - WHAT MARINA ABRAMOVIĆ'S ARTWORKS AND DIGITAL GAMES HAVE IN COMMON

BY CLARISSA WEGNER

In recent decades, digital games have emerged not only as a dominant cultural force but also as a site of artistic experimentation and expression. Despite their aesthetic and narrative complexity, games continue to be marginalized within traditional art discourse. This reluctance stems from deeply embedded institutional hierarchies and narrow definitions of art that often exclude interactive or participatory formats. Games, with their logic of systems, feedback loops, and user agency, sit uneasily within a tradition that has privileged the autonomy of the artwork and the singular authorship of the artist.

Historically, however, art has undergone significant paradigm shifts following technological and societal changes. The invention of photography, for instance, disrupted classical notions of representation, while the rise of mass production led to conceptual frameworks like Walter Benjamin's "aura" (Benjamin, 2008/1935) and Marcel Duchamp's "Readymades". Each of these transformations forced the art world to reconsider the boundaries of artistic practice (Danto, 1964). Similarly, digital games, through their integration of code, design, and user participation, challenge conventional definitions (Shanken, 2009) and invite a reevaluation of what constitutes art in the twenty-first century.

Today, an increasing number of scholars, curators, and creators argue for the artistic legitimacy of games, pointing to their capacity to evoke emotion, provoke critical reflection, and offer complex narrative structures. This essay focuses on one particular quality - interactivity - and examines its implications for the classification of games as art. By exploring how interactivity operates across different mediums, particularly in performance art and digital games, the essay questions whether audience agency undermines or enhances artistic meaning.

DEFINING ART

Defining art has long been a contentious endeavor within aesthetics and art history. In the twentieth century, thinkers such as Theodor W. Adorno emphasized the autonomy of art, insisting that truly critical or revolutionary works must maintain a distance from direct social utility. For Adorno, the more art is entangled with instrumental logic or mass appeal, the more it risks becoming "social merchandise" - a product tailored to the desires of the market rather than a reflection of aesthetic truth or resistance (Adorno, 1997).

Another theorist, Arthur C. Danto, proposed that what defines art is not a set of formal characteristics but rather its placement within an interpretive framework. In his seminal essay "The Artworld", Danto argued that

> "TO SEE SOMETHING AS ART REQUIRES SOMETHING THE EYE CANNOT DESCRIBE - AN ATMOSPHERE OF ARTISTIC THEORY, A KNOWLEDGE OF THE HISTORY OF ART".
>
> (DANTO, 1964).

According to this view, art is constituted through discourse: what matters is not simply the object itself but how it is situated within a network of cultural, historical, and institutional meanings.

These perspectives underscore two important criteria for understanding art in this essay. First, the idea that art should possess a degree of autonomy - whether formal, institutional, or conceptual - and second, that it must be legible within a theoretical or historical context. These criteria pose challenges for interactive and digital forms, which often involve open-ended user input and multiple, co-authored interpretations.

DEFINING INTERACTIVITY

Interactivity in art refers to the condition where a work is designed to respond to the actions, presence, or input of a viewer, thereby altering its form, behavior, or meaning. This concept challenges the traditional relationship between artwork and audience, in which the former is fixed and the latter is passive. Instead, interactivity implies a dynamic feedback loop: the artwork becomes contingent on the participant's engagement.

Media theorist Edmond Couchot discusses interactivity as a defining feature of technologically mediated art, in which the viewer's actions participate in the unfolding of the work rather than merely observing it (Couchot, 1998). Margot Lovejoy similarly emphasizes that digital and electronic art forms often integrate the audience into the operational structure of the artwork, making participation a constitutive element of the aesthetic experience (Lovejoy, 2004).

> CONTEMPORARY INTERACTIVE ART IS OFTEN DEFINED BY SEVERAL ESSENTIAL QUALITIES. FIRST, THERE IS A MUTUAL EXCHANGE BETWEEN THE ARTWORK AND THE VIEWER, ALLOWING BOTH TO INFLUENCE ONE ANOTHER.

This reciprocity often leads to emergent outcomes, meaning the artwork may develop in unexpected ways depending on the participant's actions. Additionally, such works typically incorporate real-time responsiveness, where the viewer's input directly shapes the progression or form of the piece. The audience is granted a level of agency, enabling them to take on an active, sometimes co-creative role. In many cases, the boundaries between artist and audience become increasingly ambiguous. These characteristics prompt a reconsideration of how authorship and interpretation function in art. Rather than maintaining a fixed meaning, interactive works invite multiple perspectives and outcomes, distributing creative control across both creators and participants. Consequently, interactivity serves as both a compelling asset and a contentious feature in ongoing discussions about the nature and definition of art (Couchot, 1998; Lovejoy, 2004; Shanken, 2009).

COMPATIBILITY OF ART AND INTERACTIVITY

The perceived tension between artistic autonomy and audience participation has led some critics to argue that interactivity undermines the integrity of an artwork. From a traditionalist standpoint, excessive user agency disperses authorship and destabilizes meaning, rendering the work incoherent or overly subjective. However, recent academic discourse offers a more nuanced view, suggesting that interactivity can, under certain conditions, enhance rather than diminish artistic value.

Anne-Marie Schleiner, in her influential essay "Ludic Mutation", proposes that interactivity extends authorship rather than dissolves it.

> SHE ARGUES THAT WHEN PLAYERS ENGAGE WITH GAMES - BY MAKING CHOICES, ALTERING PATHS, OR EVEN MODDING THE GAME ENVIRONMENT - THEY PARTICIPATE IN A FORM OF CO-AUTHORSHIP THAT REFLECTS CONTEMPORARY MODES OF CULTURAL PRODUCTION.

Schleiner embraces this participatory model, noting that interactivity enables a broader range of interpretations and experiences while still preserving a framework established by the original creator (Schleiner, 2014).

Similarly, digital poet David Jhave Johnston introduces the concept of "aesthetic animism" in his book Aesthetic Animism (2016), describing how digital poetic systems create a sense of liveliness and ontological presence through interaction (Johnston, 2016). Johnston views interactivity as a conduit for aesthetic vitality, not as a threat to authorial control. In his view, artworks come alive through user interaction, achieving a form of experiential richness that static forms may lack.

Thus, when well-structured and contextually bound, interactivity can align with the core principles of art: intentionality, composition, and critical engagement. Rather than eroding meaning, interactivity may diversify and deepen it, offering a participatory aesthetics that reflects our increasingly networked and co-authored cultural environment. As such, interactivity is not only compatible with art but may, in fact, be a defining condition of contemporary artistic practice (Schleiner, 2014; Johnston, 2016; Shanken, 2009).

CASE STUDY - RHYTHM 0 BY MARINA ABRAMOVIĆ

In 1974, Marina Abramović presented Rhythm 0 at Studio Morra in Naples (Goldberg, 2011), a performance piece that would become one of her most provocative and critically analyzed works. For six hours, she remained completely passive while standing next to a table displaying 72 objects (Goldberg, 2011; Westcott, 2010). These objects varied widely, from innocuous items such as a rose and a feather to threatening ones like a whip and a loaded firearm (Westcott, 2010). A sign beside the table informed visitors that they could use any of the items on her body in any manner they chose, and that she would not resist or react, assuming full responsibility for all outcomes (Abramović, 2016).

This radical surrender of agency transformed the audience from passive observers into active participants. As the performance progressed, audience behavior shifted dramatically from curiosity and gentleness to aggression and violence (Westcott, 2010; Abramović, 2016). Abramović's body became a site of projection, manipulation, and confrontation, as spectators explored the limits of their moral and social boundaries. The interactive structure revealed how quickly collective responsibility could dissolve when authority is abdicated.

However, this surrender of agency was not absolute. Abramović meticulously composed the performance in advance: She selected the 72 objects herself, arranged them in a deliberate setting, and framed the rules and context in which the piece unfolded (Goldberg, 2011). The choice of objects, which spanned from harmless to lethal, was itself a powerful curatorial act that shaped the psychological landscape of the interaction (Stiles, 1998). The space, the duration, and even the invitation to act were all tightly orchestrated. In this sense, Abramović maintained a significant degree of authorship and control over the structure of the experience, only appearing to relinquish power once the parameters had been set.

Critically, *Rhythm 0* has been interpreted as a powerful exploration of vulnerability, trust, and the darker potentials of human behavior (Stiles, 1998; Goldberg, 2011). It also fundamentally questions the nature of performance art: What happens when the artist relinquishes control? Where is the boundary between art and real experience? For many, the work's artistic merit lies precisely in its interactivity - its ability to elicit spontaneous, unfiltered responses that expose social dynamics in real time. Though unsettling, *Rhythm 0* is celebrated as a landmark piece (Goldberg, 2011) that redefined the relationship between artist, audience, and authorship.

Key incidents, such as when a loaded gun was placed in Abramović's hand by an audience member, or when others cut her skin, became defining moments of the performance (Westcott, 2010; Abramović, 2016). These acts, though extreme, illustrated the fragile boundary between art and violence, between spectacle and reality. They also revealed much about human nature in situations where responsibility is obscured. Critics at the time were deeply divided—some praised the work as a searing confrontation with human morality, while others condemned it as reckless or exploitative (Goldberg, 2011). Nonetheless, *Rhythm 0* remains a pivotal example of how interactivity can operate as a radical artistic strategy (Stiles, 1998).

PARALLELS BETWEEN RHYTHM 0 AND OTHER GAMES

Rhythm 0 is an artwork that introduces interactivity, the core element of games. While the medium differs, the underlying principle is similar: the audience (or player) is not merely a viewer but a participant, whose actions shape the experience. This shared structure provides a useful framework for comparing performance art and digital games.

Foundational studies in interactive and telematic art, such as those by Edward Shanken and projects like Scenario, argue that interactivity can enrich artistic authorship. By integrating human–machine interaction and audience co-creation, such projects expand the definition of art, creating immersive, emergent narratives where spectators share authorship. This position aligns with how games function: the designer establishes rules and parameters, but meaning and experience emerge through the player's actions.

Claire Bishop, in *Artificial Hells*, critiques participatory works for confining participants to predetermined roles within the artist's framework, reducing them to reactive elements rather than genuine agents. She and the Situationists questioned whether such participation risks sliding into mere entertainment, undermining both artistic autonomy and spectator agency. This critique resonates in discussions of games, where interactivity is often bounded by design constraints. Yet, as *Rhythm 0* illustrates, even within constraints, interaction can produce profound and unpredictable experiences.

By situating *Rhythm 0* alongside digital games, we see how both practices leverage interactivity to destabilize the boundary between creator and audience. The question is not merely whether interactivity qualifies something as art, but how it is structured, what agency it grants, and what meanings it enables. Both performance art and games demonstrate that interactivity, when thoughtfully integrated, can serve as a powerful tool for creating immersive, critical, and transformative experiences.

CONCLUSION

Interactive works challenge conventional expectations about how art should behave and who has the authority to create or complete it (Adorno, 1997). This has led to skepticism, particularly in the case of digital games, which are often excluded from the art canon due to their interactivity, narrative multiplicity, and collaborative production (Bishop, 2012). However, as explored throughout this essay, interactivity is not inherently antithetical to art. Rather, when deployed with intentionality and conceptual rigor, it can enrich an artwork's capacity to engage, provoke, and resonate.

Determining what qualifies as art has always been fraught with debate, shaped by evolving cultural standards, theoretical frameworks, and technological innovations. While subjectivity plays a role in how art is experienced, the designation of something as "art" cannot be reduced solely to personal perception. Artistic classification is not only about how a viewer responds emotionally, but also about contextual, historical, and conceptual factors. Intentionality, medium, authorship, and sociocultural relevance all play pivotal roles in defining a work's artistic legitimacy. Thus, while audience interpretation remains important, it does not singularly determine whether something is or isn't art.

The case study of Marina Abramović's *Rhythm 0* illustrates how interactive frameworks can function as aesthetic strategies. *Rhythm 0* demonstrates that interactivity can manifest as vulnerability and provocation, forcing the audience to confront their own capacity for cruelty or compassion. By drawing parallels between Rhythm 0 and digital games, we see that both blur the boundary between creator and spectator, inviting audiences to co-create meaning through their participation.

These examples reflect broader shifts in the art world, where the line between artist and viewer is increasingly porous. The idea that interactivity negates authorship overlooks the complex structures and constraints that shape such experiences (Schleiner, 2014; Johnston, 2016). As Anne-Marie Schleiner argues, interactivity can extend rather than diminish the artist's voice, while David Jhave Johnston's concept of "aesthetic animism" suggests that interactivity breathes new life into language, form, and expression.

Therefore, dismissing interactive media - especially digital games - as inherently "non-art" is both theoretically and empirically unfounded. Interactive works can fulfill the same functions as traditional artworks: they can critique, reflect, immerse, and move their audiences. As such, the question is not whether interactivity disqualifies a work from being art, but whether it is employed with enough thought and structure to create meaningful experiences. In this regard, interactivity is not a disqualifier, but a legitimate artistic tool - one that reflects the participatory, networked, and co-authored nature of contemporary cultural life (Shanken, 2009).

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"SUBTRACTING DESIGN:" SCOPE BIAS AND LESSONS FROM ICO

BY
ZIAD
DEMIR

Are creatives naturally inclined toward larger scopes in their work? Arriving at a data-driven conclusion to this question would require some kind of thorough analysis — for example, qualitative interviews with creators or systematic analyses of critical reviews. However, at least in the field of video games, there does exist anecdotal evidence to suggest that this question of scope is at least somewhat loaded. For example, video essayist George Weidman (2015) used the public backlash against *The Order: 1886*'s game length to discuss the latter concept more broadly. In his video, he goes over potential benefits of more compact games, while highlighting the lack of a clear link between critical acclaim and the overall scale of any given title, citing *Portal* as an example of a game that was specifically praised for its concision. (Bramwell, 2007).

However, the fact this discussion is had at all paints the choice of a more compact game scope as something to *justify*, rather than simply a neutral quality of some titles; one could argue that larger scopes are treated as the unspoken standard. The negative reaction to *The Order: 1886* originally stemmed from leaks revealing the game's unexpectedly short length ahead of both critical reviews and its wider release, meaning there was no further context to judge the playtime by — the number of hours to complete the game was *inherently* contentious, somehow (YinPoole, 2015). A strikingly similar situation occurred with 2010 third-person shooter *Vanquish:* an early review of the game warned readers of its alleged short length, which then compelled *Vanquish*'s writer JP Kellams to dispute the claim (Leack, 2010; Ryckert, 2010). Meanwhile, major summer 2025 release *Mafia: The Old Country* was sold at a budget price, possibly to get ahead of such controversy: while the publisher avoided explicitly attributing it to the game's compact scope, the press release announcing the price did include comments to The Old Country's nature as a "focused, linear experience," with 2K president David Ismailer adding: "We think there's a large audience for compelling stories that don't require massive time commitments." (2K Newsroom, 2025) Critics ended up echoing this framing in their reviews, repeatedly explaining and contextualizing the game's compactness (Gould-Wilson, 2025; Wolens, 2025; Sayed, 2025).

An interesting touchpoint in this context is 2001 PlayStation 2 title *ICO:* at the 2004 Game Developers Conference, game director Fumito Ueda explained how *ICO*'s creation was driven by a systematic method him and his team dubbed,

> "SUBTRACTING DESIGN," WHICH INVOLVES "ACTIVELY REDUCING/REMOVING THE NUMBER OF ELEMENTS INCLUDED, [SIC] TO IMPROVE AN [SIC] OVERALL QUALITY OF THE GAME."
>
> (UEDA, 2004)

What makes this particularly interesting is that Ueda acknowledges the, in his mind, unconventional nature of this method: he gives numerous examples for the types of scopes the "average game" may be inclined toward (towns, a variety of characters to interact with, "standard" systems like an inventory or HUD,) or stating that their subtractive approach requires a certain amount of courage. (Ueda, 2004) Again, this could further indicate an unspoken bias.

While *ICO* was a commercial failure at the time of its release, it has since exerted considerable influence, shaping both design discourse and creative practice (Kohler, 2013). It's for this reason that I would like to explain Ueda's Subtracting Design method in more detail, discuss why it has strong artistic merit, and then finally apply it to two contemporary games to showcase its viability in a tangible way.

DESIGN FRAMEWORK

SUBTRACTING DESIGN EXPLAINED

PRODUCT CONCEPT OF ICO

1) DIFFERENTIATION

PURSUING COMPLETE DIFFERENTION FROM OTHER TITLES TO "STAND OUT" IN THE MARKET

>MAKING A DIFFERENT APPROACH FROM OTHERS

2) ARTISTIC APPROACHED GRAPHICS

JUST 3D WAS NO LONGER INNOVATIVE, THUS TRYING TO CREATE A GAME WITH WHICH SCREEN THEMSELVES CAN BE AN "ART"

>VISUAL PRESENTATION WAS THE KEY TO THE GAME DESIGN

3) NEW LEVEL OF "REALITY"

A) "UNIVERSE WITHIN MONITOR"
-WHICH CAN AROUSE EMOTION OF PLAYERS
-SOLIDNESS, IMMERSION, EMOTIONAL EXPERIENCES

B) VIVID HEROINE
-YOU WANT TO LOOK/ACT GOOD IN FRONT OF HER, ASIDE FROM THE GAME TASK

REALITY = ENTITY SOLID
=/= PHOTO REALISM

Slide recreation for visibility purposes.

The original impetus for *ICO* came in the form of a three-point "product concept:" the first was "differentiation," aiming to "stand out in the market" by taking a fundamentally different path from existing games. The second element undergirding *ICO*'s vision were "artistic graphics:" this was in 1997 and Ueda felt that by this point the novelty of 3D was no longer enough to carry a game; instead, their goal would be to "create a game [in] which screens themselves can be [...] art," going as far as to position *ICO*'s visual presentation as "the key to the game design." The final point of this product concept was "reality:" to create a "universe within [the] monitor" that was so convincing and "solid" that it would be able to elicit a new level of emotion from the player. Specifically, the game's deuteragonist Yorda, needed to be so "vivid" as to inspire a sense of heroism in the player organically (Ueda, 2004).

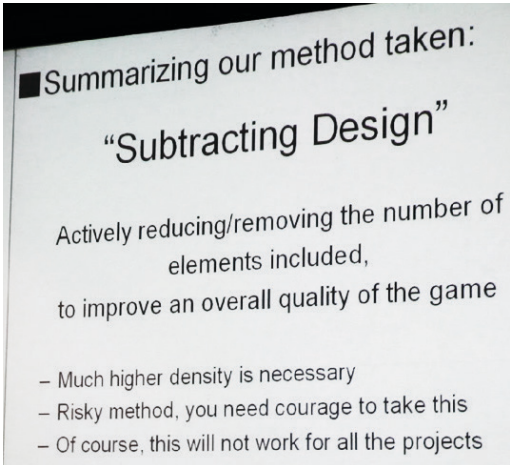
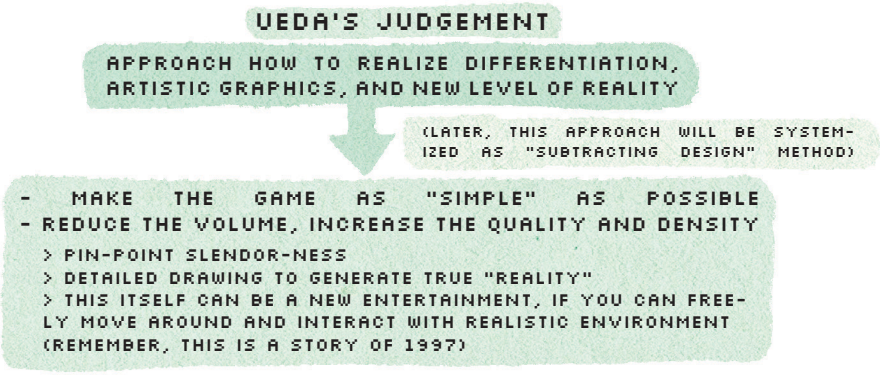


Fig. 1 *Game Design Methods of ICO*, F. Ueda, 2004; photograph by G. Piringer, hosted on J. Horneman, *Intelligent Artifice* (accessed 1 September 2025).

To achieve their stated goals, Ueda came to the conclusion it would be necessary to "make the game as 'simple' as possible:" a reduction in overall volume would naturally allow for an increase in quality and density. The GDC presentation slide for this section explains this with an interesting graphic: "quality" is represented as a series of boxes labeled from 1 to 8. While the "average game" would simply line up the boxes in chronological order across a wide "game volume," *ICO*'s approach would be to stack them on top of each other, presenting the same "amount" of quality over a much narrower stretch of game volume. Ueda calls this "more protruding design," conducted in an effort to approach the "reality" they're aiming for (Ueda, 2004).



Slide recreation for visibility purposes.

Here is how this methodology manifested in a practical sense in the case of *ICO*: once the initial concept of a boy and a girl on an adventure together was established, ideation of commonly expected game features organically followed — if there is a castle, there would have to be a surrounding town with a deep forest on the outskirts, and there would likely be a cast of recurring characters who develop over the course of the game. The next step was to then pare this back to just the essentials: the final game is confined almost entirely to the castle, ending once Yorda and Ico escape. The two lead characters are on their own for the entire journey, the only entities they encounter being antagonistic in nature (vaguely defined shadow-creatures, as well as the main villain in Yorda's mother.) (Team ICO, 2001) This naturally heightens the game's sense of isolation, placing sole emphasis on the bond between the two leads (Ueda, 2004).

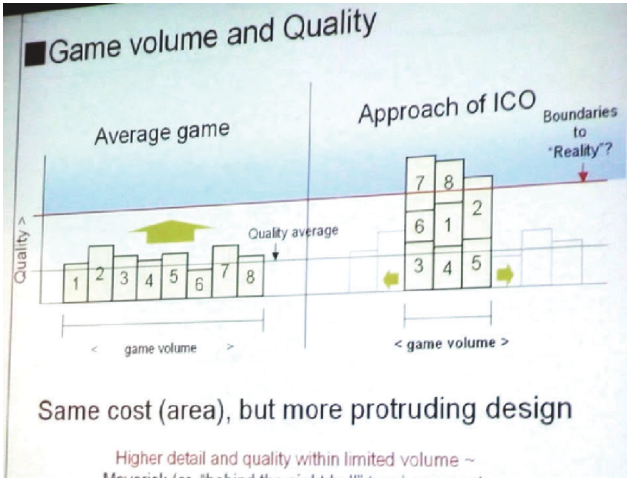


Fig. 2 *Game Design Methods of ICO*, F. Ueda, 2004; photograph by G. Piringer, hosted on J. Horneman, *Intelligent Artifice* (accessed 1 September 2025).

Ueda goes on to detail the benefits that naturally arise from this process: with fewer elements left to work on, it stands to reason that they will have more resources committed to them, leading to a higher level of quality. There is a logical conclusion here: any individual game element has the potential to "totally destroy the overall atmosphere" that has been otherwise "carefully created." The more moving parts in the game, the higher that risk becomes (Ueda, 2004). If an element can't be polished to the level of overcoming this "distracting" quality, it may genuinely be better to prune it entirely. An obvious example for this would be villagers in your typical RPG: how much dialogue would one have to commit to an NPC to make it truly convincing? Most games have their characters begin to repeat their lines so early that we've grown numb to the convention, when it may actually be more convincing, effective and artistic to not feature such characters at all (Ueda, 2004).

Toward the end of his talk, Ueda acknowledges that his Subtracting Design method won't suit all types of projects; however, there are enough practical angles to draw from in the examples and principles cited to conduct a theoretical application of Subtracting Design to existing games, and imagine how their artistic vision might have been expressed more strongly through some trimming and increased emphasis on the essentials. For the final section of this essay, I will take two contemporary games, *Mario Kart World* and *Monster Hunter Wilds*, and run them through a three-step Subtracting Design process:

1. identify their core artistic vision;

2. identify superfluous elements;

3. prune and rearrange elements to emphasize the central conceit (Ueda, 2004).

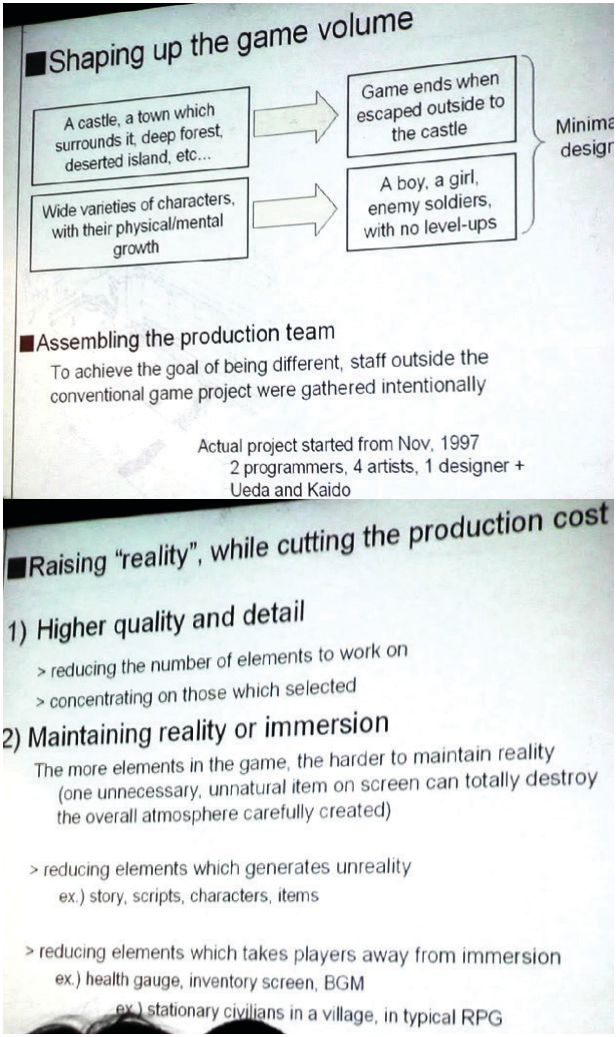


Fig. 3 *Game Design Methods of ICO*, F. Ueda, 2004; photograph by G. Piringer, hosted on J. Horneman, *Intelligent Artifice* (accessed 1 September 2025).

SUBTRACTING DESIGN APPLIED TO MONSTER HUNTER WILDS AND MARIO KART WORLD

With this framework established, we can now test its applicability by examining two contemporary games. Over its life as one of Nintendo's flagship series, *Mario Kart* has continually toed the line between accessible multiplayer driving, and rich mechanics and level design ripe for competition. Most games in the franchise can boast significant dedication from players aiming to master them, and that quality manages to exist in harmony with Nintendo's efforts to provide an easier onboarding experience for new players with every game: *Mario Kart Wii* prominently featured intuitive motion controls, and more recent entries d efault to applying accessibility features like Smart Steering or Auto Acceleration (Nintendo EAD, 2008, 2014). It can be argued that a top priority for Nintendo has always been to get players into the main thrust of gameplay as seamlessly as possible, and this year's *Mario Kart World* continues this trend in some respects, for example by having items automatically trail the player character after they're picked up, meaning players no longer have to hold the item button to perform this action (Nintendo EAD, 2025).

For that reason I would characterize the core "objective" of *Mario Kart* on a conceptual level to be fast-paced, pick-up-and-play fun where both novice and experienced players can participate and have an experience tailored to their preferences. How does *Mario Kart World* fit into this? The game's major innovation is the titular open world that all race tracks are now situated in and physically connected by. Tracks can still be played entirely individually, however most game modes leverage this feature in a structural sense. The new Knockout Tour mode essentially paints a massive stretch of land through the open world, covering multiple tracks and all the space in between, which players now have to traverse in a seamless Battle Royale competition. As a standalone feature, this mode has been received largely positively for its sense of tension and chaos (Nintendo EAD, 2025; MacDonald, 2025; Plant, 2025).

However, the open world also factors into traditional Grand Prix and online races. After completing a race, the subsequent race always begins by physically traveling through the open world to reach the next "proper" track. This means that traditional tracks with their dense level design and tight corners now only make up about half of a given race, with the other half spent on "intermission" travel time through the open world. Judged against Ueda's quality / game volume dichotomy, this could be interpreted as taking a similar stretch of game volume as prior *Mario Kart* games, but interspersing it with "lower quality" segments, diluting the overall design (Nintendo EAD, 2025).

While *Mario Kart World* was an overall popular game with critics, this particular choice has been widely criticized in both reviews and by players (Phillips, 2025). The open world can be further explored in the game's leisurely Free Roam mode, and while its optional nature means it draws much less ire than the forced intermissions elsewhere, its relative dearth of engaging activities or explicit structure is considered a missed opportunity by some (Taylor-Kent, 2025). Again, this maps seamlessly onto Ueda's ideas, viscerally showcasing that giving yourself this much game to work with leaves few re-

sources to bring everything up to the same standard, with the open world coming across as far less polished than the main tracks (Nintendo EAD, 2025).

Nintendo are faced with a dilemma here, because they've already committed vast resources to the creation of the open world. Ideally, the purpose of the open world should've been scrutinized earlier in development so that those resources could potentially be redirected elsewhere. As it stands, the open world's current utilization is seen as an active detriment to the experience by many, and it's a difficult decision to walk back without offering a compelling alternative for it. *Monster Hunter Wilds* has been subject to a similar discrepancy between its highly positive critical reception and increasing public backlash (Capcom, 2025; *Monster Hunter Wilds on Steam; Monster Hunter Wilds Reviews*). However, the latter seems mostly related to performance issues and lack of engaging endgame activities, and doesn't tie into the Subtracting Design idea in an obvious way (Townsend, 2025). The following analysis will therefore be much more subjective, while still following the core principles undergirding Subtracting Design.

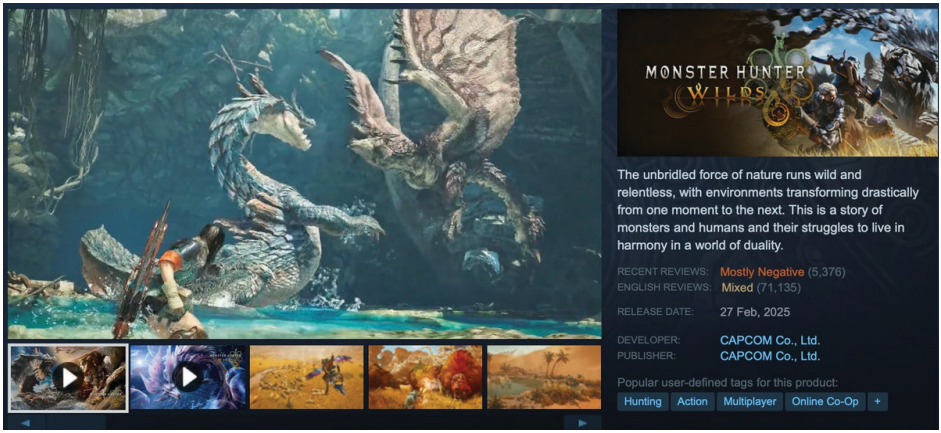


Fig. 4 *Monster Hunter Wilds Steam* page and user reviews (accessed 1 September 2025).

Monster Hunter Wilds exemplifies the accumulation of systems typical of long-running franchises. At its heart, the series has always sought to convey the thrill of confronting colossal creatures within complex ecosystems. Individual entries lean into this by meaningfully expanding on central combat mechanics without diluting their committal and tactical nature, or by realizing their ecosystems in a richer way. *Monster Hunter World* in particular added many new ways for creatures to interact with each other as well as their environment, which the player may partake in organically (Capcom, 2018, 2025).

However, the frequency with which moment-to-moment gameplay diverges from this vision has increased with practically every game, reaching an arguable tipping point in *Wilds*. Hunts are chosen from linear lists in a workman-like fashion, with the player choppily ping-ponging between the safety of their central village and the open wilderness as they repeat the same fights over and over again to pilfer their prey for crafting materials. These materials are used to create armor and weapons, the compulsion of this process

acting as a primary motivator throughout the game while inadvertently cheapening the reality of the hunt. This all contributes to a sense of artifice, turning encounters into purely mechanical exercises rather than singular, immersive experiences (Capcom, 2025).

While this tension has always been present in the series, *Wilds* displays an increased interest in the immersive and experiential quality of its premise: individual areas are completely contiguous and subject to changing weather conditions, monsters interact even more freely than before and many new mechanical additions like makeshift camps or creature migration encourage the player to stay out in the wilderness for extended periods. However, the game does all this while leaving its vestigial elements largely unexamined, making them even more starkly discordant (Capcom, 2025).

One possible application of the Subtracting Design lens might suggest that these elements serve as the unpolished distractions Ueda cautioned against, threatening to compromise the game's overall impression (Ueda, 2004). This is where aggressive pruning and reexamination may preserve overall artistic integrity: removing the quest structure, for instance, would allow encounters with monsters to occur organically within the environment, each carrying a unique, unrepeatable weight. Eliminating reliance on villages and shops could focus attention on survival and improvisation, with equipment emerging solely from materials procured in the field. With the linear quest list gone, progression could instead function spatially, with players advancing deeper into the world — whether by exploring subterranean environments or ascending vast landscapes — until an eventual climactic confrontation. Such an approach would shift *Monster Hunter* away from compulsive repetition toward an experiential model emphasizing immersion, tension, and atmosphere. While this design would likely diverge from fan expectations, it would embody Ueda's call for density over volume (Ueda, 2004).

CONCLUSION

Subtraction, as articulated by Fumito Ueda, offers a valuable counterpoint to the prevailing emphasis on scope within creative industries and particularly within video game development. Subtracting Design demonstrates that a reduction in volume, when paired with a concentration on quality and density, can result in works of enduring artistic significance. While not universally applicable, the method invites developers to critically examine whether each design element serves the project's core vision or merely expands its breadth. Applied to *Monster Hunter Wilds* and *Mario Kart World*, the framework illuminates both the risks of overextension and the potential of restraint.

IN A MEDIUM OFTEN DRIVEN BY ACCUMULATION, UEDA'S PHILOSOPHY REMINDS US OF THE AESTHETIC AND EXPERIENTIAL POWER OF FOCUS: THAT IN DESIGN, AS IN ART MORE BROADLY, MEANING OFTEN EMERGES NOT FROM WHAT IS ADDED BUT FROM THE THOUGHTFUL CURATION OF ONE'S IDEAS.

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GAMIFICATION, MOTIVATION, AND CONTRADICTION:

BY LAURA ESPINOSA OSPINA

A CRITICAL ANALYSIS OF DUOLINGO

Gamification, defined as the use of game-like elements in non-game contexts (Deterding et al., 2011), has become a prevalent strategy in digital learning environments. Platforms such as Duolingo have successfully integrated badges, streaks, leaderboards, and daily XP systems into their interfaces, aiming to enhance user engagement and retention. The popularity and commercial success of these platforms have led many developers to replicate similar motivational systems all across the education sector.

Gamified systems, while being effective at improving user engagement, sometimes employ dark patterns: designs that covertly manipulate user behaviour in ways that benefit the developers, often at the expense of user autonomy or well-being (Gray et al., 2018). The term "dark pattern" originates in user experience (UX) research and refers to interface strategies that trick users into decisions they might not otherwise make. When applied in learning contexts, such patterns may distort users' relationship with the initial learning objectives by pressuring them to interact not out of curiosity or internal motivation, but to avoid negative feedback or penalties.

Dark patterns have been largely identified in mobile games (DarkPattern.games, n.d.), but gamified systems are direct descendants of games and therefore inherit many of their tools. In gamified learning, these patterns often hide behind "motivation-boosting" features. For example, loss aversion is weaponised through daily streaks and hearts systems, and social pressure is introduced via leaderboards and aggressive push notifications. In these cases, the persuasive design elements may create the appearance of motivation while inducing anxiety and compulsive behaviours that inhibit meaningful learning (Almeida et al., 2023).

Duolingo provides a particularly strong example. While promoting language acquisition and having excellent user reviews on App stores, its system often incentivises forced interactions through high-pressure and punishing tactics. For example, breaking a streak is framed as failure, lives ("hearts") are lost after errors, inducing stress and pushing users to pay as a form of emotional repair. Mogavi et al. (2022) report that users often prioritise maintaining streaks or accumulating XP rather than achieving comprehension or retention. These mechanics can override a user's intrinsic motivation and interest in the subject matter, especially when learners feel punished for stepping away or trying something challenging.

According to Deci & Ryan (1985), motivation lies on a continuum from autonomous to controlled, with the best outcomes occurring when individuals feel autonomy, competence, and relatedness. Designs that undermine these three basic psychological needs can decrease intrinsic motivation over time, a trend which has been observed in a great number of studies on the effectiveness of gamification (Hamari, Koivisto & Sarsa, 2014), even if they are able to temporarily boost engagement through controlled regulation and extrinsic rewards. In Duolingo's case, the repetitive nature of XP farming, punitive "heart" systems, and leaderboard anxiety may erode autonomy and competence, encouraging what in Self-Determination Theory (SDT) is called controlled or introjected regulation: actions driven by guilt, obligation, or external pressure. These dynamics may explain the emotional fatigue, frustration, or dependency reported by some Duolingo users, particularly when progress is equated with arbitrary metrics rather than meaningful progress within the subject.

This paper argues that Duolingo, while widely praised as an accessible and fun tool, also serves as a case study for how gamified platforms may sometimes implement dark design patterns under the guise of motivating better educational outcomes. The central aim is to critically analyse Duolingo's motivational affordances and identify how its features may be manipulating user behaviour by framing it within the propositions by Gray et al., (2018) and referencing the database found on DarkPattern.games as an example of how they can be applied to games. After pointing to the presence of these patterns, it will describe possible reasons why some users may find their motivation to be impacted, borrowing from the basis of Cognitive Evaluation Theory (CET) and Organismic Integration Theory (OIT) (Ryan and Deci, 2000) to explain this common phenomenon.

CONFLICT OF INTEREST

While Duolingo's design is often perceived as friendly and playful, its motivational structure reveals a deeper conflict of interest: one between designing for the user's educational benefit and designing for continued engagement. As with many free-to-use platforms, commercial success depends on user retention and monetisation, which is not inherently aligned with meaningful learning outcomes. From this perspective, it is unsurprising that features which increase daily interaction or encourage users to pay for convenience are prioritised over those that promote autonomy or deeper comprehension.

What makes these tactics particularly insidious is how innocuous they seem. The aesthetic presentation of gamified platforms; bright colours, cheerful characters, and celebratory animations, disguises their underlying behavioural control mechanisms. These systems appear harmless and appealing at first glance, but many employ strategies aligned with what Gray et al. (2018) define as *dark patterns*: interface designs that subtly manipulate users into actions that may not align with their goals or best interests, and instead, benefit the developer. The primary ones identified in their work being *nagging*, *obstruction*, *sneaking*, *interface interference*, *and forced action*. In addition to these, the authors of the site DarkPatterns.games applied and extended these to the analysis of mobile games, defining "Dark Gaming Patterns", and an extensive list of subcategories that fall under *temporal*, *social*, *monetary*, and *psychological* dark patterns. The present analysis provides a few examples of how these patterns can be observed in Duolingo and subsequent implications for user motivation.

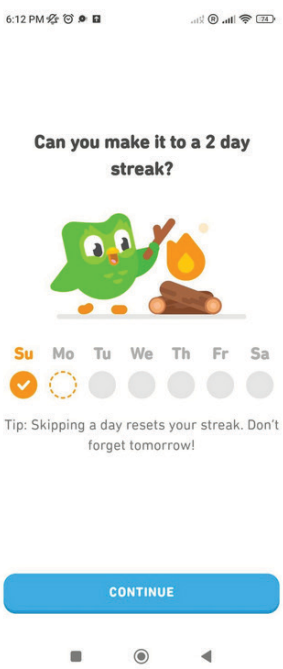

Fig 1 Duolingo Streaks

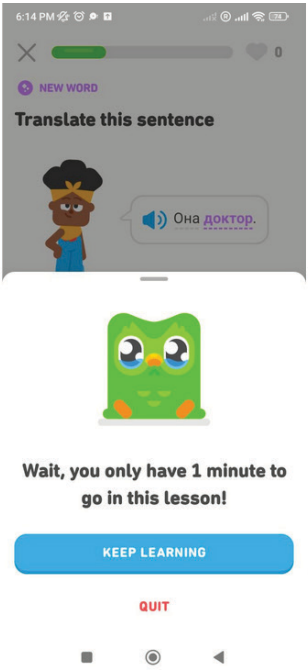

Fig 2. Duolingo Notification

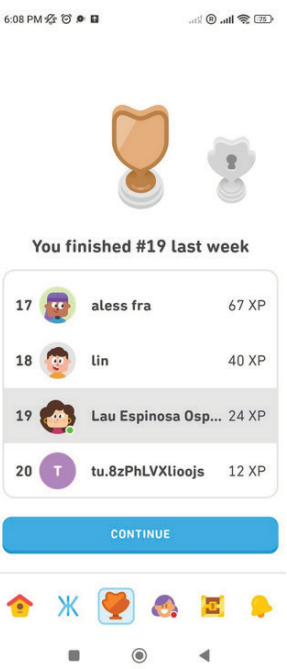

Fig. 3 Duolingo Leaderboard

In Duolingo's case, the streak system (Fig. 1) is a clear instance of a temporal dark gaming pattern, particularly the "Playing by Appointment" category, which makes the player adapt to the app's schedule, forcing the player to engage on a daily basis, even if they intended to dedicate only certain days in a week. Additionally, it pressures users through persistent reminders, an example of the "Nagging" pattern, that reminds the user to engage daily to avoid loss. Streaks can also be associated with the "Daily Rewards" temporal pattern, intended to form a habit, but in the case of Duolingo, there is no direct reward given, only the avoidance of a lost streak.

The app's messages are often phrased in guilt-inducing terms. In the case of Fig. 2, the pop-up appears when the user abandons a lesson, using the crying owl mascot as an emotional device to retain the user and make it harder to follow through with the user's initial intention of ending the lesson early. This instance falls under the pattern of "Interface Interference", combining both the subcategory of "Toying with emotion" and "False Hierarchy". By using the image of the crying avatar, and writing the word "Quit" in red, it is framed as a decision with negative emotional consequences. In this same example, the "False Hierarchy" is established by making the "Keep Learning" button seem like the correct and easier option to press, even if it goes against the intention of the user of interrupting the lesson.

Similarly, the use of hearts (Fig 4 & 5) that limit how many errors a user can make (unless they pay or wait) reflects a combination of Grey et al.'s "Obstruction" and "Forced Action" patterns, the temporary dark pattern of "Wait to play" and the monetary dark pattern of "Artificial Scarcity" to encourage the user to pay. The "Obstruction" pattern is observable in its subtype "Intermediate Currency" by using gems and hearts to disconnect from the real money value spent on them, and, to continue access to the lessons, the user is subjected to the "Forced Action" pattern through the "Social pyramid scheme" subtype by including the possibility of adding friends in exchange of *hearts*. This mechanic is punishing and unhelpful towards the educational objective, where errors should be followed with more repetition of the content instead of less.

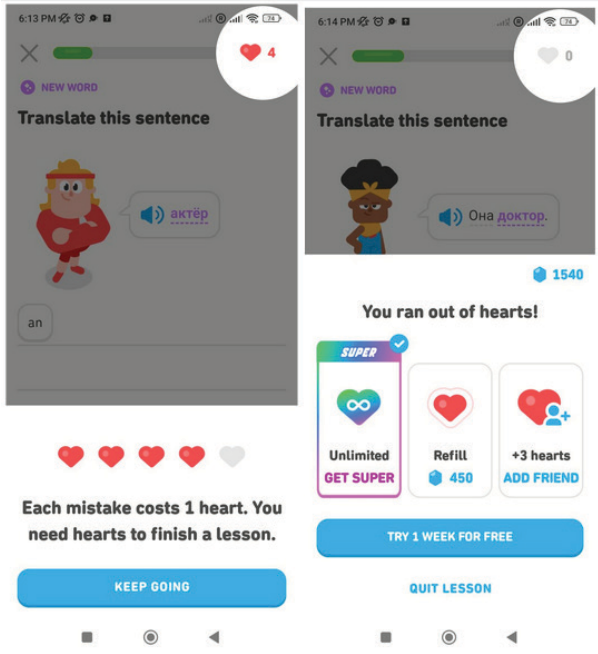

Fig. 4 & 5 Duolingo Heart System

Duolingo also employs a weekly Leaderboard (Fig. 3), which introduces a competitive element to the experience. "Competition" in games can be engaging and motivating, but with no opt-out to this feature it can be considered a Social Dark Pattern by obligating users to participate in social comparison that has little to do with their learning.

THE EFFECT ON USER MOTIVATION

Self Determination Theory (SDT) (Ryan & Deci, 2000) is a macro-theory on human motivation, which is the drive that moves an individual to perform intentional behaviour. It frames *autonomy*, *competence*, and *relatedness* as basic psychological needs, and explains how supporting or undermining these has a direct effect on a person's motivation.

When analysing how a gamified approach impacts motivation, it is essential to pose the question about quality and type of motivation its affordances are impulsing. Ryan & Deci (2000) identify the types of motivation as *amotivation* (lack of drive), *intrinsic motivation* (acting out of enjoyment or interest), and *extrinsic motivation* (acting in the pursuit of an outcome other than the self). In general, gamified systems excel at delivering extrinsic motivators through features like points and badges, which serve as an open invitation for users to internalise target behaviours, in this case, practicing a language. Although every individual may be affected differently by Duolingo's motivational affordances, it is still important to recognise how certain patterns may create negative outcomes in user's motivation over time. In consonance to Organismic Integration Theory (OIT) (Ryan & Deci, 2000), a subtheory of SDT which describes how humans' regulatory processes to internalise tasks and behaviours, it can be affirmed that systems that rely heavily on rewards and punishments are externally controlling, and therefore can undermine autonomy. In many senses, the design patterns described in the previous section are guilty of this, by directing the choices of the users, and resorting to persuasive strategies that might not be transparent, create feelings of anxiety, and are not always aligned with achieving learning milestones.

STREAKS FUNCTION AS A FORM OF EXTERNAL REGULATION AND CAN FEEL PUNITIVE WHEN THEY ARE BROKEN. THIS DYNAMIC MAY UNFAIRLY PENALISE USERS WHO ENGAGE WITH THE APP AT A RHYTHM THAT DIFFERS FROM THE ONE PRESCRIBED BY THE SYSTEM.

Likewise, the heart system restricts continued use after mistakes and pressures users to either wait or take additional actions to keep progressing. These mechanics that obstruct user activity and compel specific behaviours limit user autonomy directly.

On another level, leaderboards create a sense of competition intended to motivate users to practice more lessons by comparing themselves to others. This leads users to farm XP, in some cases, to avoid feelings of shame for falling behind or improve self-esteem by dominating the ranks. Both of these approaches, although seemingly different, constitute examples of introjected regulation, a regulatory style driven by a somewhat external locus of causality. By combining rewards and social comparison, the user is layering external control with internal rewards and punishments, which can harm both relatedness and feelings of competence.

Despite the conflicted nature of the design patterns previously described, it would be reductive to claim that all of Duolingo's systems are purely manipulative or without

merit. They provide structure, visibility of progress, and a sense of achievement that can help users commit to a routine that may be, in principle, aligned with their language acquisition goals. Cognitive Evaluation Theory (Deci and Ryan, 1985) supports this: external incentives or constraints are not inherently harmful to motivation, as long as they are perceived as supportive of a desired behaviour rather than controlling. In this light, Duolingo's features may help users overcome initial resistance to practice by offering clear feedback and manageable goals that align with the user's needs. For example, maintaining a long streak can support feelings of competence around a personal objective and can therefore improve motivation for a period of time.

The problem emerges when the system fails to adapt as the user progresses. According to Organismic Integration Theory (Ryan and Deci, 2000), long-term motivational support requires more than external prompts: it requires the gradual internalisation of the activity's value. A well-designed system, assuming the primary goal is to promote learning, should evolve with the user, shifting the focus from compliance to reflection. But in Duolingo, the same loops persist indefinitely. There is no mechanism for recognising when a user is ready to take more ownership of their learning, no support for reflection on evolving learning goals. The motivational structure remains fixed, keeping users in a cycle of externally regulated behaviour.

Observations relevant to this line of reasoning are those made by Almeida et al., (2023), who found that gamified educational systems can lead to user frustration, demotivation, and even avoidance, particularly when superficial motivational elements dominate the user experience over time. Their study highlights what many long-term Duolingo users describe: an initial surge of engagement that slowly gives way to emotional fatigue, especially when the perceived progress feels detached from meaningful learning.

This critique is not new.

IN HIS ESSAY "GAMIFICATION IS BULLSHIT", IAN BOGOST (2011) ARGUES THAT GAMIFICATION IS LESS ABOUT GAMES AND MORE ABOUT CONTROL DISGUISED AS ENGAGEMENT. TO BOGOST, GAMIFICATION IS A SHALLOW APPROPRIATION OF GAME LANGUAGE, LIKE BADGES, POINTS, AND LEVELS, USED TO MASK COERCIVE SYSTEMS.

It creates the illusion of play while enforcing compliance. While intentionally provocative, his point holds weight: simply making an experience look like a game does not ensure it is enjoyable, meaningful, or ethically sound. And in the case of Duolingo it is important to recognise to what extent their systems are still aligned with the user's learning goals, how much they draw influence from proven pedagogic methods, and when the design of Duolingo starts abusing motivational affordances that encourage compulsive use.

THE BUSINESS STRATEGY BEHIND SELF-AWARENESS

Duolingo's social media presence makes it clear that the company is aware of the emotional tension its gamification strategies create. Rather than denying or addressing the frustration some users feel, it leans into it with humour. Posts often reference the guilt and pressure that come as a result of their design and marketing choices, turning them into a joke or a shared experience. This kind of self-aware marketing builds a sense of relatability and community around the app's more uncomfortable aspects, making users feel seen, but without offering any solutions. In fact, by acknowledging these feelings without changing the systems that cause them, Duolingo normalises them. It frames the pressure as something amusing and harmless, even though it reflects coercive design strategies that manipulate users into maintaining behaviours that benefit the system, at the expense of their time, goals or well-being. By incorporating these manipulative elements into the brand's identity, Duolingo makes them harder to critique seriously. Ultimately, the fact that these strategies are effective from a business perspective and achieve the desired growth in numbers appears to outweigh the discomfort they may cause to the user.

CONCLUSION

This paper explored the motivational structure of Duolingo and how its design decisions, though presented through playful visuals and seemingly harmless game mechanics, can be more accurately understood through the lens of behavioural control. By identifying several uses of dark patterns as defined by Gray et al. (2018), the analysis highlighted how Duolingo relies on such mechanisms.

Using Cognitive Evaluation Theory (CET) and Organismic Integration Theory (OIT) as a lense, this paper explained how and why these dark patterns can negatively affect user motivation. This analysis revealed that many of Duolingo's features, such as limited hearts and streak pressure, risk undermining those needs. By focusing too much on reward loops, users may experience reduced autonomy and a diminished sense of competence, leading to the erosion of intrinsic motivation over time.

While the app may succeed in initiating behaviour through extrinsic motivators, it lacks adaptive mechanisms to shift the user toward more autonomous forms of engagement. Instead, users are kept within fixed reward loops, and their long-term participation is often maintained not through personal investment in language learning but through avoidance of negative consequences.

CRUCIALLY, THIS PAPER DOES NOT ARGUE THAT GAMIFICATION IS INHERENTLY FLAWED, NOR THAT EXTERNAL REWARDS SHOULD BE ENTIRELY AVOIDED. IT RECOGNISES THAT GAMIFIED ELEMENTS CAN SUPPORT HABIT FORMATION, ESPECIALLY IN THE EARLY STAGES OF USER ENGAGEMENT.

However, when gamification is designed with the primary goal of user retention and monetisation, as is clearly the case in Duolingo, the system's motivational claims require closer examination, as there are conflicting interests. Duolingo's gamified experience is not simply about language learning; it also intends to maximise daily use, reduce drop-off rates, and encourage users to convert to paid features. In this sense, motivation and monetisation are not separate concerns in Duolingo; they are structurally intertwined.

For educators aiming to implement gamification in their subject, this paper highlights the importance of critical evaluation of the available tools. Simply borrowing the visible features of popular apps without interrogating their function or psychological consequences can result in systems that might not be relevant to educational objectives but can still create unintended psychological impact.

Ultimately, this paper advocates for a more reflective and ethical approach to gamification, one that considers not just what keeps users coming back, but how they feel while engaging, and what kind of relationship they are forming with the system itself. Understanding that gamification can serve different agendas is the first step in designing more transparent, consensual systems that truly support sustainable, self-determined engagement rather than compulsive interaction.

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TRIGGER, TILT, AND TURN: GAME CONTROLLERS, MENTAL MODELS, SEMIOTICS, AND THE PLAYER EXPERIENCE

BY KAI JAESCHKE

Games enable experiences, as Jesse Schell puts it (2020, p. 11). In other words, experiences are only indirectly designed by the game designer. Rather, they arise from the player's interaction with the game, as noted by Schell (Schell, 2020, p. 11), as well as Katie Salen and Eric Zimmerman (2003, p. 316) in their foundational work *Rules of Play*. This interaction requires some form of input and output between the player and the game, enabling the player to perceive the game's changing state and the game's reaction to the player's actions (Salen and Zimmerman, 2003, pp. 314–316). Schell (2020, pp. 268–273) understands this input-output exchange as an intrinsic part of the interface, which he defines as everything between player and game. Necessary parts of this interface layer are physical input and physical output, which respectively enable the player to act and perceive within the game world (Schell, 2020, p. 270).

This text focuses on the physical input device and its role in shaping the player experience in digital games. After all, as Steve Swink (2009, p. 64) notes, the controller is the filter through which the player's actions and intent need to pass to become data comprehensible to the computer. Therefore, the specifics of the physical interaction with the controller and the connection between actions exerted on the controller and connected in-game actions are a vital part of the player experience. This begs the question, which parts of the player experience does the controller affect, and how does its role as translational device between the physical and the game world shape that effect?

ON THE CONTROLLER AND PLAYER EXPERIENCE

To begin with, controllers can be divided into two general categories. On the one hand, there are the common standardized input devices—keyboard and mouse, or a gamepad—on the other, there are specialized input devices—commonly based on motion, touch, gaze, or other novel or uncommon forms of input collection (Caroux *et al.*, 2015, p. 371). Much of the current research on controllers is focused on the impact of such specialized controllers on the player experience in comparison to standardized ones. As Loïc Caroux et al. (2015, p. 372) note,

> THE SPECIFICS OF SUCH SPECIALIZED GAME CONTROLLERS "MAY INFLUENCE PLAYERS' PERFORMANCE, ENGAGEMENT, PRESENCE, PERCEIVED REALISM, AND ENJOYMENT."

A similar relationship was observed by Daniel Pietschmann et al. (2012, pp. 279–281), who investigated the effect of controllers providing a more authentic or realistic experience—controllers, which in some way require the player to act as if they were performing the in-game actions in the physical world.

In their experiment, they had participants play *Sega Superstar Tennis* (Sega, 2008) on the Wii, either with a gamepad or a tennis racket controller (Pietschmann, Valtin and Ohler, 2012, pp. 284–285). They found that using an authentic game controller increased the amount of fun players felt while playing, as well as their sense of presence and immersion (Pietschmann, Valtin and Ohler, 2012, pp. 287–288). Notably, they found that the increase was in the form of greater sensomotoric immersion in particular (Pietschmann, Valtin and Ohler, 2012, p. 287), which is centred on the player's sensory perception and their body's movement during play (Cf. Pietschmann, Valtin and Ohler, 2012, p. 281). Regarding the increase in fun, they suspect it to be at least partially caused by a greater sense of self-efficacy developed through the increase in sensomotoric immersion (Pietschmann, Valtin and Ohler, 2012, p. 288).

Self-efficacy, which refers to people's belief in their ability to perform actions to achieve a specific outcome (Bandura, 1978, p. 141), has also been connected to input devices by other scholars. Benny Liebold et al. (2020, p. 3) investigated the effects of naturally mapped controllers, which they understand as interfaces that tap directly and authentically into the human perceptual system to enable intuitive interaction in a digital environment—a similar concept to the authentic controllers described above. They found a strong link between the perceived naturalness of a controller and a player's perceived self-efficacy (Liebold, Bowman and Pietschmann, 2020, p. 6).

However, they found that the type of controller—gamepad or natural—had little influence on the perceived naturalness of the mapping between action exerted on the controller and in-game action performed as a result (Liebold, Bowman and Pietschmann, 2020, pp. 6–7). On the contrary, they found that for self-identified gamers, gamepads were more likely to be perceived as natural (Liebold, Bowman and Pietschmann, 2020,

p. 7). Similar findings were made by Andrew Thorpe et al. (2011, p. 76) who had participants compete against each other in a specially developed two-player game using a variety of input devices. They observed that players find familiar input devices easier to use and that the amount of fun players have depends on how intuitive or suitable an input device is for a game (Thorpe, Ma and Oikonomou, 2011, p. 90).

In consequence, the benefits of specialized controllers for the player experience can only manifest if the interaction with the input device and the connected in-game actions are designed to suit each other. Interestingly, Pietschmann et al. (2012, p. 289) noted a similar sentiment:

> "GAME DESIGNERS HAVE TO ENSURE THAT THE INTERACTION MATCHES THE USER EXPECTATIONS. THE USAGE OF AUTHENTIC INPUT DEVICES DOES NOT AUTOMATICALLY INCREASE THE ENTERTAINMENT VALUE OF A COMPUTER GAME FOR EVERY PLAYER, SINCE THEY USUALLY HAVE SUBJECTIVELY DIFFERENT EXPECTATIONS REGARDING THE INTERACTION WITH THE GAME SYSTEM. A NOTABLE DIFFERENCE BETWEEN THE GAME EXPERIENCE AND THE REAL-WORLD EXPERIENCE OF THE USERS CAN REDUCE OR EVEN DESTROY THE SENSOMOTORIC IMMERSION."

They observed this particularly in participants with greater experience in playing real world tennis, as those participants did not experience as significant an increase in immersion as other participants (Pietschmann, Valtin and Ohler, 2012, p. 289). Based on interviews with the affected participants, they suspect this to be caused by the experienced tennis players expecting a more authentic simulation of tennis than Sega Superstar Tennis provided (Pietschmann, Valtin and Ohler, 2012, p. 289). In a similar vein, Liebold et al. (2020, pp. 1–3) note the role of mental models in players' interactions with an input device, highlighting that naturally mapped controllers attempt to access pre-existing mental models to enable intuitive interaction with the controller and quick learning of in-game interactions. They also note that experienced players' preference for gamepads likely stems from robust mental models developed specifically for using them (Liebold, Bowman and Pietschmann, 2020, p. 8).

This highlights the importance of mental models in players' interactions with input devices and the responsibility of the game designer to be conscious of the mental models players are likely to access during gameplay. However, this still leaves the question how these mental models become connected and are adapted to gameplay.

ON MENTAL MODELS AND SEMIOTICS

Mental models can be understood as internally held representations of connections within external systems or situations, which can be used to reason about the hypothetical possible states or outcomes of those external systems or situations (Johnson-Laird, 2004). In other words, when games draw upon a pre-existing mental model, they draw

upon the player's comprehension of and reasoning ability within the borrowed mental model. When presented with a tennis game such as *Sega Superstar Tennis*, the player immediately begins understanding the game's internal rules and systems through the mental model they have already built for the real-world game of tennis. And when presented with a specialised input device in the shape of a tennis racket, they understand how to interact with and use the controller based on their mental model of a real-world tennis racket, e.g., that swinging it functions to hit a ball. Of course, the ball does not physically exist in the real world but is instead part of the virtual in-game reality, visually represented through pixels on a screen.

In play, these two mental models become intertwined. The player's mental model of the game's internal rules enables them to decide which actions their player-character needs to take in game—e.g., swinging the virtual racket at the right time. Meanwhile, their mental model of the controller—in this case borrowing from their mental model of a real tennis racket—tells them how to swing the device, deciding such things as direction, angle, and velocity. Elements of the two models become intrinsically linked, the action of swinging the controller becoming a sign for the player-character to swing its racket as well. Interestingly, the study of signs, semiotics, is intrinsically connected to mental models, as Philip Johnson-Laird (2004, pp. 180–182) brings up Peircean semiotics as an important precursor of the modern theory of mental models in his historical overview.

> IN SEMIOTICS, A SIGN IS "SOMETHING WHICH 'STANDS FOR' (OR REPRESENTS) SOMETHING ELSE"
>
> (CHANDLER, 2022, P. 2)

In Peircean semiotic theory, a sign can be divided into the signifying element, the interpretant, and the signified object (Atkin, 2023, sec. 1). The signifying element is the minimal conceptual aspect of the sign that establishes its connection to the signified object (Atkin, 2023, sec. 1.1). Furthermore, the signifying element is determined by the signified object, in so far as the signified object sets requirements the signifying element must fulfil to be representative of the object (Atkin, 2023, sec. 1.2). Finally, the interpretant is essentially the translation of the signifying element into the object, providing a conceptually more complex understanding of the world outside the immediate perception of the signifying element removed from all other concepts (Atkin, 2023, sec. 1.3). So, to briefly summarize, a sign only becomes such when a signifying element is translated by an interpretant to be an indication of the signified object (Chandler, 2022, p. 2) (Atkin, 2023, sec. 1).

As such, semiotic connections between actions exerted on the controller and in-game actions are only established when the player understands and interprets the real-world action to represent and correspond to the linked in-game action. The question then is how these connections between real-world controller-action and virtual game-action are constructed.Based on Peircean semiotics, Johan Blomberg (2018, sec. 3.2) suggests three categories: resemblance (iconicity), contiguity (indexicality), and convention (symbolicity).

SEMIOTICS

> RESEMBLANCE ESTABLISHES THE CONNECTION BETWEEN CONTROLLER-ACTION AND GAME-ACTION THROUGH PERFORMATIVE AND FUNCTIONAL RESEMBLANCE TO THE REAL-WORLD OBJECT AND ACTION THEY DRAW ON.
>
> (CF. BLOMBERG, 2018, SEC. 3.2.1)

The tennis racket controller and *Sega Superstar Tennis* are a direct example of this, swinging the controller bears performative resemblance, and the player-character swinging their virtual racket to hit the ball provides functional resemblance. As Blomberg (2018, sec. 3.2.1) notes, this connection is only drawn as long as the mapping from controller-action to game-action is designed to provide functional resemblance. The example he notes is the use of trigger buttons on gamepads in shooter games, which connect pulling the trigger on the controller through resemblance to pulling the trigger on a gun—an iconic connection drawn through performative and functional resemblance (Blomberg, 2018, sec. 3.2.1). Notably, resemblance connections can also be more abstract. Another example Blomberg (2018, sec. 3.2.3) brings up is the mashing of the A-button in *Track & Field II* (*Konami*, 1988) to run faster; here, the physical effort of the player connects to the virtual physical effort of the player-character.

Contiguity connects controller-action and game-action through metonymy: the controller and controller-action become indices of the connected in-game elements, e.g., a virtual object, part of which is represented through the controller in the real world (Blomberg, 2018, sec. 3.2.2). Blomberg (2018, sec. 3.2.2) brings up *TLoZ: Skyward Sword* (*The Legend of Zelda: Skyward Sword*, 2011) as an example, noting that the whole of the sword is indicated by the Wii Remote serving as the sword's hilt in the player's hand. He also brings up the connection between trigger buttons and firearms again, noting that the trigger on the controller indicates the entirety of the weapon (Blomberg, 2018, sec. 3.2.2). This dual connection between pulling the trigger button on a controller and firing a weapon through both resemblance and contiguity highlights that the semiotic connections can be constructed through multiple pathways at once (Blomberg, 2018, sec. 3.2.2).

Conventionality, unlike the other two categories, establishes the connection not through a perceptual relation but instead, as the name implies, convention—the utter commonality of how often a specific controller-action is connected to a specific game-action (Blomberg, 2018, p. 3.2.3). This type of connection, of course, can also occur together with the other semiotic pathways. For example, the right shoulder trigger firing a weapon is a typical connection in shooter games (Blomberg, 2018, sec. 3.2.1), making this a controller-action connected to the corresponding game-action along all three semiotic pathways.

Furthermore, when considering multiple controller-action and game-action pairings in context of each other, new semiotic connections can surface. Blomberg (2018, p. 3.2.4) brings up the common use of WASD for player-character movement in 3D games—each

button connects to one movement direction by convention, but when viewed in context of each other, their position on the keyboard in relation to each other creates a connection through resemblance as well.

In that sense, these semiotic pathways serve as a bridge between the two mental models players access during play—the model of the game's internal rules and systems and the model of physical interaction with the controller—allowing for the player's interaction with the game at a holistic level. Players essentially combine the two separate mental models into one larger model on how to play the specific game they are interacting with, adjusting it as they play. This, in turn, can also lead to the decay of resemblance-based semiotic connections as they learn to elicit the same in-game actions with less performatively resemblant controller-actions (Blomberg, 2018, p. 3.2.1).

SIMILARLY, IT SEEMS SENSIBLE THAT SEMIOTICS ALSO PLAY AN IMPORTANT ROLE IN SELECTING WHICH PRE-EXISTING MENTAL MODELS TO ACCESS WHEN FIRST ENGAGING WITH A GAME. EVEN JUST SEEING A CONTROLLER DESIGNED TO RESEMBLE A TENNIS RACKET ALREADY SUFFICES FOR THE PLAYER TO CALL UPON MENTAL MODELS CONNECTED TO TENNIS AND PLAYING VIDEO GAMES.

The input device's nature as a controller indicates a game console, which in turn indicates the activity of playing a video game. Its design resembling a tennis racket implies its functional and performative elements calling upon the player's mental model for using a tennis racket and playing tennis. These connections combined indicate the activity of playing a tennis video game.

Both Liebold et al. (2020, pp. 6–8) and Thorpe et al. (2011, p. 90) found that players prefer familiar input devices to unfamiliar ones. Upon seeing a gamepad, experienced players will immediately access their mental model of the device. Then, once they have recognized what game, or genre of game, they are playing, they also access their mental model of the internal rules and systems they expect the game to have. From the genre and other traits of the game—e.g., its visualisation in 2D or 3D—they will then also expect the controls to connect a certain way through the semiotic pathway of convention.

In other words, semiotics and mental models determine which actions players expect themselves to be capable of. In consequence, if the controller-actions map unintuitively or badly to the game-actions, their sense of self-efficacy will be drastically reduced. As such, semiotic theory is an effective lens to identify players' expectations of their capabilities, which enables developers to select suitable input devices and control-scheme for an increase in perceived self-efficacy.

CONCLUSION

To summarize, game controllers can be broadly divided into two categories—standardized and specialized—and are proven to affect the player experience, particularly immersion and fun, mediated in significant part through the player's perceived self-efficacy. In the interest of greater self-efficacy, experienced players prefer using familiar input devices such as gamepads, a standardized controller.

However, that is not to say that standardized controllers are strictly preferable to specialized controllers. Game developers can access the potential player experience benefits of specialized controllers if they consciously design the game for the mental models players will access upon first engagement with the game. To identify the mental models as well as the expected connections between the controller-actions and game-actions, semiotic theory presents an effective lens as it details the perceptual pathways along which these connections are drawn. If properly leveraged, the semiotic perspective should enable developers to anticipate players' expectations regarding available game-actions, available controller-actions, and how they are mapped to one another. From these expectations, developers can select suitable input devices and design intuitive control schemes, mapping controller-actions to game-actions either easily perceptually associated with one another or well-entrenched in the conventions of control schemes. In that sense, self-efficacy is intrinsically connected to semiotics and mental models, as they shape players' expectations of their abilities and are responsible for the ease with which players learn the controller-actions and their connections to game-actions.

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BREAKING THE GAME: GLITCHES AND THE POLITICS OF PLAYER AGENCY

BY
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When a player clips through a wall to skip a level, they are not just breaking the game: they are breaking the rules of who gets to decide what play means. The game designer, however, designed a particular ruleset and systems, and planned a whole experience for the player to experience. This *procedural rhetoric* (as coined by Ian Bogost) and thus the imposition of a system of rules on the player may diminish the player's agency, autonomy, and self-expression. In contrast, play is supposed to be a free, personal act that is appropriate and which cannot be predetermined by context, as researchers such as Miguel Sicart argue.

This essay investigates how players navigate, manipulate, and subvert the systems designed to govern their actions within video games, exploring glitches, mods, and speedrunning as forms of resistance against designer authority and the commodified structures of the gaming industry. By examining specific in-game glitches and speedrunning communities, this essay highlights how players transform rigid game structures into open spaces of collaborative experimentation and cultural authorship. These practices often operate on principles of shared knowledge, voluntary collaboration, and communal learning, contrasting sharply with the profit-driven, proprietary logic of mainstream game development.

Beyond questions of agency and creativity, the essay considers the political and anti-capitalist dimensions of emergent gameplay. By disrupting commercialized game structures, players assert control over cultural production, reclaiming ownership of the games they inhabit and challenging the commodification of play.

PROCEDURAL RHETORIC, PROCEDURALISM, AND PLAYER AGENCY

Games are not simply a medium with entertainment as their purpose. They can also function as powerful instruments of persuasion. Ian Bogost's concept of *procedural rhetoric* emphasizes how the rules and systems that structure games are capable of communicating ideas and shaping perspectives. Designers can utilize interactivity to guide players toward experiencing and internalizing a specific message (Bogost, 2007). However, when a rigid system of rules is imposed with the purpose of controlling the player's behavior through a fixed set of actions, it effectively strips away agency, autonomy, and self-expression. These are qualities that are fundamental to the very nature of play. This tension raises a critical question: How do players resist such an authoritative and seemingly totalitarian design framework?

Needless to say, the question has some exaggeration to it. However, when examining the *proceduralism* from which the concept of procedural rhetoric emerges and placing it in the context of video games, interesting angles become apparent. Miguel Sicart is a vocal critic of proceduralism. For him, proceduralism is the perspective that a game's meaning lies entirely in its rules and systems, which prescribe in advance what players can do and how they should play. He critiques proceduralism for its alignment with modernity's instrumental rationality, which frames games as labor-like systems of efficiency and order. Within this interpretation, play is reduced to a mechanical, goal-oriented process rather than embraced as an expressive or ritualistic act that emerges from the players themselves (Sicart, 2011).

This recalls Theodor W. Adorno and Max Horkheimer's critique of leisure under late capitalism, in which amusement ceases to stand apart from labor and instead replicates its conditions, as mechanization transforms recreation into a mere continuation of the work process (Horkheimer & Adorno, 2002). I will touch upon this thought later in this essay, but I am mentioning it already, as in much the same way, proceduralism confines play to a fixed sequence of predefined actions and outcomes. The designer defines the boundaries of possibility before the game even begins, pushing spontaneity, experimentation, and creativity to the margins of the experience. In this framework, a game conveys only what its rules prescribe, while players merely function as the activators of the system that sets the designer's meaning in motion (Sicart, 2011).

RULE-BENDING AS AN EMERGENT ACT OF RESISTANCE

Sicart frequently highlights the idea of "play as a space of autonomy" (Sicart, 2014). He conceives of play as a free, personal, and appropriative act that "cannot be predetermined by context" (Sicart, 2014). For Sicart, genuine play requires recognition of the player's freedom and creativity by shaping meaning during gameplay. As he puts it:

> "PLAYERS DON'T NEED THE DESIGNER – THEY NEED A GAME, AN EXCUSE, AND A FRAME FOR PLAY."
>
> (SICART, 2011)

They defy rigid and rational structures, reshaping games into personal and lived experiences. This transformation is not simply functional; it represents a creative expression of human agency.

> "AGAINST THE ARGUMENT OF EFFICIENCY AND RATIONALITY, WE SHOULD INVOKE THE AESTHETICS OF PLAY, THE ETHICS OF EXPRESSION, THE MYTH IN THE MACHINE. TO SURPASS INSTRUMENTAL PLAY AND ADDRESS THAT WHATEVER GAMES CONTRIBUTE TO OUR CULTURE, PLAY CANNOT BE CODIFIED; IT CANNOT BE LIMITED AND BOUND TO THE PROCESSES DELIMITED BY ARBITRARILY CREATED RULES DICTATED BY DISTANT DESIGNERS. PLAY BELONGS TO PLAYERS, AND THE GAMES' MEANING RESIDES IN THE ACTION OF PLAYERS."
>
> (SICART, 2011)

One practical example of this would be the use of glitches. When glitches, which are errors in a game's code that lead to unintended behaviors, are considered in the equation, questions of ethics inevitably arise. For instance, if a player exploits a bug in *This War of Mine* to stockpile resources, they may effectively bypass the game's intended – or, to preemptively concede to a Barthesian critique, at least the heavily implied through its scripted sequences and mechanics – commentary on scarcity and human suffering during wartime (Mikey Nakada, 2015). Such an act challenges the procedural meaning envisioned by the designer, raising the question of whether these actions should be understood as unethical disruptions or as natural extensions of player freedom within a designated system. Sicart argues that when players resist proceduralist control by breaking rules and repurposing the game, they assert their autonomy and undermine the designer-centric framework imposed on them (Sicart, 2011). This act of resistance can be seen as a direct contrast to the "totalitarian" authority of the proceduralist designer.

Interacting with game systems through glitches and exploits represents a distinctly emergent form of play, where the underlying mechanics are stretched to their limits and transformed into new, unintended experiences. This process resonates with Sicart's understanding of play as an expression of agency as an activity that both adheres to and challenges the constraints of rules:

> "PLAY, FOR BEING PRODUCTIVE, SHOULD BE A FREE, FLEXIBLE, AND NEGOTIATED ACTIVITY, FRAMED BY RULES BUT NOT DETERMINED BY THEM. THE MEANING OF A GAME, ITS ESSENCE, IS NOT DETERMINED BY THE RULES BUT BY THE WAY PLAYERS ENGAGE WITH THOSE RULES BY THE WAY PLAYERS PLAY. THE MEANING OF GAMES, THEM, IS PLAYED, NOT PROCEDURALLY GENERATED."
>
> (SICART, 2011)

Through glitches, players creatively reconfigure the game world, transforming it into something unique and personal. In doing so, they effectively become co-creators, producing emergent experiences that exceed the designer's original intentions. A prominent example of speedrunning, where players attempt to complete a game as quickly as possible, often relying on glitches such as clipping through walls or bypassing the scripted progression logic. These communities dedicate themselves to discovering new glitches and refining the fastest possible routes through games (Hay, 2020). By doing so, they appropriate the game for their own purposes, constructing an emergent culture of play that challenges the designer's authority. This phenomenon parallels real-world forms of resistance, in which people repurpose or subvert rigid systems for their own benefit.

THE POLITICAL ECONOMY OF PLAY

As previously mentioned, Sicart's critique of proceduralism heavily echoes Adorno's and Horkheimer's critique of leisure under late capitalism, where mechanization shapes leisure into an extension of the labor process. However, this can further be expanded to their broader critique of the culture industry under capitalism, as there is a vast commonality between games and other forms of mass media. In *The Culture Industry: Enlightenment as Mass Deception*, which is part of their work *Dialectic of Enlightenment* (1944), Adorno and Horkheimer name the grave problem of media in capitalism:

> "CULTURE TODAY IS INFECTING EVERYTHING WITH SAMENESS. FILM, RADIO, AND MAGAZINES FORM A SYSTEM. EACH BRANCH OF CULTURE IS UNANIMOUS WITHIN ITSELF, AND ALL ARE UNANIMOUS TOGETHER."
>
> (HORKHEIMER & ADRONO, 2002, PP. 94)

They compare mass culture to modern urban planning, where urban housing projects promote individuality and healthy living, but in fact, they make people more subject to capitalism's control by isolating them into uniform, easily manageable units. Both urban planning and mass culture create the illusion of personal autonomy, when in reality, everyone is absorbed into the same organized system. Under the industrial monopoly created by capitalism, all mass culture, and thus the media they consume, becomes uniform and standardized.

This also reached the point where the system no longer needs to pretend to be art:

> "FILMS AND RADIO NO LONGER NEED TO PRESENT THEMSELVES AS ART. THE TRUTH THAT THEY ARE NOTHING BUT BUSINESS IS USED AS AN IDEOLOGY TO LEGITIMIZE THE TRASH THEY INTENTIONALLY PRODUCE."
>
> (HORKHEIMER & ADRONO, 2002, PP. 95)

Art has become a culture industry, legitimized by its "millions of participants [who] demand reproduction processes which inevitably lead to the use of standard products

to meet the same needs at countless locations" (Horkheimer & Adorno, 2002, pp. 95). What works is being reproduced, and since it is only happening to meet the consumer's needs, it is "accepted with so little resistance" (Horkheimer & Adorno, 2002, pp. 95). This lack of resistance against standardization had an even more grave effect:

> "THE FORMER [TELEPHONE] LIBERALLY PERMITTED THE PARTICIPANT TO PLAY THE ROLE OF THE SUBJECT. THE LATTER [RADIO] DEMOCRATICALLY MAKES EVERYONE EQUALLY INTO LISTENERS, IN ORDER TO EXPOSE THEM IN AUTHORITARIAN FASHION TO THE SAME PROGRAMS PUT OUT BY DIFFERENT STATIONS."
>
> (HORKHEIMER & ADRONO, 2002, PP. 95-96)

Consumers are steered and absorbed into cherry-picked content by the operators above. Some forms of content work better than others, and thus the profit-driven industry tends to reproduce them more frequently. However, Adorno and Horkheimer argue that when completely different art forms all follow the same formula, claiming that this standardization merely reflects the public's natural demands is merely a false excuse; yet success and high profits are used to legitimize the production of more shallow, manipulative content (Horkheimer & Adorno, 2002). In line with this argument, art became heavily quantified and calculated: consumers are divided into categories based on statistics, the value of art is measured by the amount of investment, and every part of the "product" is coordinated in advance – a total industrialization of culture, where capital has won over art.

The same applies to video game consumers: players are divided into different types, and advancements in graphic fidelity are a measure of a game's value. Every aspect of the "product" is carefully coordinated in advance according to the latest trends. Games and other mass media became predictable due to their conformity to the "standards". Instead of creating works with ideas and meaning, the culture industry focuses on isolated effects and spectacles that most strongly affect the consumer's emotions; details are no longer rebellious against an art style and are absorbed back into the formula: "It crushes equally the whole and the parts" (Horkheimer & Adorno, 2002, pp. 99).

And life itself is being molded to mimic the predictability of a sound film, or nowadays, a graphically advanced game, where outcomes are predetermined and satisfaction comes from fulfilling expectations. Mass culture celebrates mediocrity as "democratic," whereas critical judgment is condemned as arrogant and "elitist." Producers and consumers agree to reproduce the same shallow "sameness," and all the parties are content with this conformity of the consumer.

This all leads to their critique, which Sicart later emphasizes in his work: under mechanization in late capitalism, all consumers are subjugated to consuming entertainment as a prolongation of work.

SPEEDRUNNING

"AT THE SAME TIME, HOWEVER, MECHANIZATION HAS SUCH POWER OVER LEISURE AND ITS HAPPINESS, DETERMINES SO THOROUGHLY THE FABRICATION OF ENTERTAINMENT COMMODITIES, THAT THE OFF-DUTY WORKER CAN EXPERIENCE NOTHING BUT AFTER-IMAGES OF THE WORK PROCESS ITSELF. THE OSTENSIBLE CONTENT IS MERELY A FADED FOREGROUND; WHAT IS IMPRINTED IS THE AUTOMATED SEQUENCE OF STANDARDIZED TASKS. THE ONLY ESCAPE FROM THE WORK PROCESS IN FACTORY AND OFFICE IS THROUGH ADAPTATION TO IT IN LEISURE TIME. THIS IS THE INCURABLE SICKNESS OF ALL ENTERTAINMENT. "

(HORKHEIMER & ADRONO, 2002, PP. 109)

And this, in turn, amalgamates in the procedural rhetoric, where "the spectator must need no thoughts of his own: the product prescribes each reaction, not through any actual coherence, which collapses once exposed to thought – but through signals" (Horkheimer & Adorno, 2002, pp. 109). The procedural rhetoric, where players are expected to experience the game in the correct way, is what the use of glitches in video games ought to resist.

Glitches break the illusion of the perfect commodity; they reveal its fragility. While industrial culture products like film (and also games) can be created with a perfect technical integration, that "[mock the] fulfillment of Wagner's dream of the total art work" (Horkheimer & Adorno, 2002, pp. 97), it is only a mask that hides the superficiality at its core. And glitches can expose this; from simpler glitches where players get to see something that has not been placed by the developer in the accessible parts of the game, such as the glitchy *Pokémon* species, *MissingNo*, (Platinum, 2010) whose encounter has been warned about by Nintendo themselves, (*Nintendo Power 1988 - 2004*, n.d.) to glitches where large portions of the games are skipped by using glitches where the players exit the tangible bounds of the game world and access the loading zone behind a locked door (Nap42, 2014).

To further tie the thread back to speedrunning as the most notable emergent form of glitched play: at its core, a speedrun does not need glitches and can just be a challenge of mechanical skill. In recent games, some have even added a speedrun mode, where the time is actively measured by the game, with the intent of this mode of play. Some games even revolve around being played as quickly as possible, such as *SpeedRunners*, the time trial mode in the *Mario Kart* franchise, or even early examples such as *Wolfenstein 3D*, where the player's time is compared to the developer's, John Romero's, personal times (Romero, 2023). At first glance, this suggests that speedrunning is not inherently anti-capitalist and non-conforming, as it occurs within the boundaries of a game's system. However, this perspective overlooks how speedrunning fundamentally redefines the purpose and meaning of play itself. Rather than simply optimizing within designer-de-

fined goals, speedrunners often invent their own categories, rulesets, and arbitrary constraints. Categories such as *100%*, which require the runners to collect every single item in the game, sometimes necessitate the use of glitches to play out the game in a different order than the one scripted by the developer, as it is faster than playing it the intended way. or *Low%* runs, where the runner tries to beat the game with as few items as possible, with the use of glitches. Or such as the *Low%* speedrun for *VV* where the player has to wait for 17 hours for the "item obtained from chest" screen, as there is a bug that causes the player to move a few pixels with every animation loop and thus eventually skipping a door for which an item as needed and thus progressing the game without it (Lowest Percent, 2020). In most cases, those rulesets have no relevance to the game's intended experience. In doing so, they detach play from the game's original purpose and transform it into a self-directed, community-driven activity that resists the passive and standardized consumption of the game.

It is community-driven, as there are large speedrunning communities that often function on principles that defy capitalist models. They share their knowledge freely on platforms like *Reddit*, measure their records on leaderboards on pages like *Speedrun.com*, (*Home - Speedrun.Com*, n.d.) and even organize large events, such as *Games Done Quick*, where speedrunners transform gameplay into collective charity work rather than monetized entertainment for the individual consumer (*Games Done Quick*, n.d.). In a way, the communities resemble unions in that they collectively work together to improve practices and protect communal knowledge, which lies in stark contrast to the commodified product "game."

CONCLUSION

This research has examined how procedural rhetoric and proceduralism shape the relationship between designers and players, highlighting the tensions between rule-bound systems and the autonomy of play. By drawing on Sicart's critique of proceduralism and connecting it to Adorno and Horkheimer's critique of leisure under late capitalism, I demonstrated how games can replicate broader cultural mechanisms of control. At the same time, it showed how glitches, exploits, and practices such as speedrunning open up spaces of resistance, allowing players to reclaim agency and transform standardized systems into emergent, creative experiences.

Future research could expand this line of inquiry by investigating how different player communities interpret and reshape games in ways that resist or subvert their procedural meaning. Comparative studies across genres, platforms, and cultural contexts could further illuminate how resistance manifests differently in digital play. In addition, more attention could be given to the intersection of glitch-based play and broader political and economic structures, especially in relation to how online communities organize themselves in contrast to the commodification of games by the culture industry.

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SHARING WHAT WE HOLD DEAR THROUGH VIDEO GAMES

BY
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When we are born, we do not get to choose our culture. It is gifted to us by our parents, grandparents, and wider community. Though it seems all too easy to forget the value of the cultural good we have through the many routines and mundane problems of daily life. Truly, life seems to move at a daunting pace, with new worries emerging constantly while a news cycle churns unending. While this rush goes on, small tragedies happen in tvhe background, too, as parts of language, culture, and folklore are lost. Whether through dwindling population, poor records, or aggressive efforts of erasure, reminders come every day of the fragility of culturally significant materials all round the world.

This essay highlights contemporary attempts at erasure of entire people and their culture, specifically the Uyghur people in China, and in Russian occupied areas of Ukraine. Further, thoughts on diversifying static ways of archival follow, to avoid tragedies such as the Cologne archive collapse of 2009, notably by looking towards the digital for a solution. As the medium of video games matures into a serious mode of art, their popularity and ease of access offers an exciting option to preserve and amplify lesser known cultures, their language, and the uniqueness of their folklore. A successful example of this is the 2014 video game *Never Alone*, as its positive reception, dedicated and inclusive development, and cultural value will prove.

WARNING: THIS ESSAY BRIEFLY TOUCHES ON SENSITIVE TOPICS, SUCH AS HUMAN SUFFERING, WAR, GENOCIDE.

CURRENT AFFAIRS

It is impossible to preserve everything, and loss is a fundamental fact of life. Yet complacency is not the answer to this futility either. Humans have sought to preserve what they deemed meaningful or important all throughout history. As retellings of elder to younger, or carvings onto stone, up until the materials and technological leaps required for various forms of preservation became accessible - print, sound, image, video, and beyond.

AS PARTICIPATION, PERSONAL INPUT, AND EXPERIENCES CONTINUOUSLY GAIN FAVOR WITH AUDIENCES, DIGITAL GAMES CAN BE USED AS A UNIQUE AND INTERESTING WAY TO PRESERVE AND SHARE CULTURALLY SIGNIFICANT MATERIAL.

The maturing medium has evolved past arcade thrills and repeatedly actualizes itself as an artform, a way of serious story telling, and also a conduit for important messaging. Although video games are not a perfect interactive solution, it is a solution regardless, with their accessibility both in creation and play making them an attractive method to use.

FRAGILE FOLKLORE AND THE UNACCEPTABLE WEIGHT OF LOSS

As Rita Mae Brown succinctly states, “language is the road map of culture” (1988, p. 47). Language operates as a framework that culture and folklore build upon, just as culture interlinks with language in its expression. On the day of writing, over 3000 languages are said to be at risk of losing their living speakers within a few short years (Eberhard et al., 2023). If no action is taken to preserve them in some form, the remaining speakers will one day take their language, and culture, to the grave. The spoken word carries various fine, specific details, sets of which remain unique to their respective language. It is by no mistake that one’s first language carries a seemingly heavier impact or deeper meaning. It is the language that shaped one’s disposition, view of the world, folkloric heirlooms, and culture. Hence, in the trifecta of language, culture, and folklore, if one is lost, the others crumble along with it.

It may feel rather abstract and far away, the many languages at risk, that is. Their number is large, no doubt, and so much is lost every single day already. However, imagine one’s own language suddenly pushed towards endangerment - all the art, cultural treasures, way of life fading into nothingness, as if it never existed at all. For many this is a grim, daily reality, and it is not due to a lack of individual effort. No, sometimes the cause is a force outside of the affected culture and people.

Russia’s illegal operation to usurp Ukraine, started in earnest in February 2022, seeking to take away their homes and land, way of life and children (Walker, 2025). One method of stripping the identity of Ukrainians trapped in occupied territories is to take away

CULTURAL ERASURE

their language. Russia has outright banned the use of Ukrainian in schools, with Russian taking its place (Meduza 2025). This tactic is not new to Russia. According to Weeks, in the past any "non-Russian ethnicities from Tatars to Poles, Jews to Moldavians, Lithuanians to Komi, all suffered from some form of legal and/or cultural discrimination [...] (in particular after 1863)" (2004, p. 471). In essence, this is a simple continuation of the past.

Bold-faced attempts at cultural destruction are ongoing in the world. Political unrest is rife, and several conflicts and military operations continue on the world stage, yet some of them receive less coverage than others. Despite varying attention, all of them are of equal weight and importance, as inevitably real human suffering accompanies these actions, no matter how loud or quiet they might be.

In Uyghurstan, also known as China's Xinjiang province, resides the Uyghur people. Their culture is a unique blend of 'Turkic, Persian, and Islamic influences', and it shows in their musical, literary, and culinary treasures (UT, 2023). However, their way of life is under attack from constant surveillance and bans of their cultural practices. Worse still, over time the Chinese government has imprisoned over 1 million of the 11 million population in concentration camps, where forced labor, poor conditions, and sterilizations are a daily reality (Maizland, 2022). Many shameless attempts to cover up the ongoing genocide happen daily. To obfuscate their true intentions, the Chinese Communist Party hosts propaganda events, forcing Uyghur people to attend and smile through staged dances of their own culture, set to nationalistic music associated with previous campaigns in the region (UT, 2025).

Armed conflict or government conspiracies are not a requirement for folklore to be endangered. Printed word, sound recordings, visual media such as image and video reside within the shelves of many libraries across the globe, waiting silently to be held and examined once again. Yet their existence may be overlooked or wholly forgotten, especially by the average information seeker today, or through poorly kept collections. The fragility of physical archives cannot be overlooked either - paper is not infallible, digital technologies age and become obsolete, files become corrupted. Or it can be damaged by flame, moisture, or purely physical abrasion, often unexpectedly. The Cologne archive collapse of 2009 serves as a prime example. In minutes, kilometers worth of book-filled shelves disappeared into the water-flooded hole below, and the painstaking effort to rescue what could be salvaged followed (Fuchs, 2014). To contrast this tragedy, due to dwindling library customership, the National Library of Latvia created their Digital Library. The grand collection offers over 18 million entries, from books to video and audio, accessible for all, online, immediately (DLL, 2025). It eases the strain of current day commutes and becomes accessible for those that require barrier free options.

GAMES FOR CULTURAL TREASURES - NEVER ALONE

The triad of spoken language, cultural traditions, and folkloric tales is notoriously hard to archive to a satisfactory extent. An unknown language does not sound itself out on a page of a book, nor does a culturally significant celebration come alive through a picture, while folklore often feels similar to disjointed puzzle pieces at the best of times. Videos can give a surface level insight to the ways of life of different people, yet the pain point remains as this method lacks interaction. To truly experience a culture, some amount of interactivity is needed, and it is not easy nor immediately available to have this experience in person, whether due to financial, time or distance reasons. This is where video games can assist, as they can act as a playful medium of delving into nearly any topic, and with their heightened accessibility being a welcome addition as well.

One such project came from a community that is no stranger to colonialism, violence, and erasure. Despite the unfair treatment of the past, a number of Native American tribes persist even today, and see it as their duty to keep their stories and culture alive. Never Alone is the delightful success story from the Iñupiat people—a game that moved audiences, educated players on the community it is based on, and won awards on the world stage.

Fig. 1 Title art of *Never Alone*

ABOUT NEVER ALONE

The game *Never Alone*, also known as Kisima Innjitchuna, is a 2014 title blending both the Iñupiat culture as well as their folklore in a puzzle-platformer experience. The authors, Upper One Games, aimed to show this indigenous folk tale, which was kept alive for generations, to a wider audience through the medium of digital games. Their success is palpable, as was seen by *Never Alone*'s great reception and several awards - "Best Debut Game" at the 2015 BAFTA Games Awards, along with "Game of the Year" and "Most Significant Impact" at the 2015 Games for Change Awards, respectively (*Never Alone*, 2014).

Set in the harsh environment of Alaskan nature, the story follows a young Iñupiat girl by the name of Nuna, who is rescued and accompanied by an Arctic fox. Through joined forces, the pair set out on a journey to find the source of an eternal blizzard which threatens the survival of both Nuna and her people. As the blizzard rages on, her village remains unable to hunt, and the risk of starvation looms. Both the little girl and her animal companion compliment each other within the game's mechanics, as one relies on the other to solve the various puzzles found in the environment - Nuna interacts with items in the environment while the fox calls upon spirits to assist them in progressing through the perilous terrain.

CULTURE AT THE FOREFRONT

What is very pertinent about *Never Alone*, is that it explicitly shows its intent of bringing attention to the cultural values and way of life of the Iñupiaq people. The narrative of the game is based on a traditional tale by the name of Kunuuksaayuka. To ensure the tale was honored and retold accurately, the team sought out assistance from elder Minnie Aliitchak Gray. Her late father Robert Nasruk Cleveland was the first to record the story, which, through an Iñupiat tradition, gets passed on to the eldest born in a family (Alspach, 2017). Once the game opens, the player is greeted with a narration in Iñupiaq by James Nageak, who has since passed away (Encelewski, 2019). This calls back to the frightful threat of loss within smaller cultures, and what an incredible treasure it is that Mr. Nageak was able to narrate the game in his language, and that it was documented in a way where Ms. Gray could assist in bringing the tale to life.

The mythology of *Never Alone* also reflects the values and way of life of the Iñupiat people, as it focuses on themes relevant to their culture - close community, subsistence hunting, and respecting the nature that keeps them alive. All are an intrinsic part of their daily lives, and *Never Alone* will gladly let that be known, giving players additional context through documentary style videos. These segments are called "Cultural Insights", a reward for progressing within the game. They consist of vignettes of their real-world lives, including interviews with Iñupiat elders, storytellers, and community members, who speak about their people's history, values, and traditions.

THROUGH UTILIZING THE GAME AS A STAGE FOR THESE INFORMATIVE PORTIONS, NEVER ALONE MANAGES TO BOTH ENTERTAIN AND EDUCATE AT THE SAME TIME.

Some might consider the Cultural Insights jarring or out of place, yet they fit within the goal of the developers, and only add to an experience meant to showcase both a folk story and the people originating it.

SUCCESS IN RECEPTION

Never Alone was received very warmly on a global scale. Many people saw the value in the intent of the developers and lauded them for their cause. It shows in several reviews as well - the game has a generally positive score of 72 with game critics, and a 62 with users on the aggregate site Metacritic (2014). As for the drawbacks that reviewers reported, they never rested with the story, but were instead pointed at issues with the gameplay itself, notably at times clunky controls or lacking instruction on some puzzles. In fact, the goal of *Never Alone* along with all the heart and care poured into it was the reason why the title resonated so deeply with players, so much so that it carries three awards - "Game of the Year" and "Most Significant Impact" from the 2015 Games for Change Awards, and "Best Debut Game" from the 2015 BAFTA Games Awards.

THE EFFORT IT TAKES

Of course, awards are not why projects like this are made, and *Never Alone* accomplished what it set out to do and put the Iñupiat people in the spotlight, if only for a little moment. Besides educating the gaming community on a culture they otherwise would not have heard of, it also showed what can be achieved and done for marginalized people and unknown folklores. Players and studios alike discovered that there is indeed a demand for unique stories and new perspectives, as *Never Alone*'s success quietly challenged the reigning status quo.

Yet, a game like *Never Alone* requires a lot of care and attention to detail in order to be made.

> CULTURAL SENSITIVITY, A DEEP UNDERSTANDING OF THE SOCIAL COMPLEXITIES AND STRUGGLES PRESENT IN A COMMUNITY, ALONG WITH CONSTANT DIALOGUE WITH THE MEMBERS OF THE SPECIFIC CULTURE ARE VITAL FOR A SUCCESSFUL PROJECT, ANYTHING LESS RISKS BORDERING APPROPRIATION AND SPEAKING OVER MARGINALIZED VOICES.

The developers included nearly 40 people from the Iñupiat tribe, all of them from different stages of life and background to get a well rounded view - elders, cultural ambassadors, historians, youths, and so on (Alspach, 2017). Inclusivity did not end at collecting the materials necessary for *Never Alone*, as the Iñupiaq writer Ishmael Hope supported the E-Line team during the narrative development as well.

CLOSING

In the face of cultures fading due to circumstances ranging from dwindling community numbers, newer generations losing touch with their roots, or aggressors forcing assimilation under their own language, we must remember that there are many ways to preserve what we hold dear. When conventional means of preservation feel too static and cold, and when present methods fail, technology, and specifically video games, offer a unique opportunity to create a digital document. With interactivity being a focus from the start, cultural games offer a more open, easier way to connect on a deeper level with the experiences they aim to provide.

There is both passion in those who want to help unknown peoples and culture to gain the voice and reach they deserve, along with those who wish to experience and hear about them. This was evident with the warm reception *Never Alone* received, as it opened the eyes of many that games can serve as a vehicle for cultural good, while also providing a valuable addition to the rich folklore of the Inupiat in this specific case. Due to its humanitarian and commercial success, the developers plan a reimagining of it in a second installment titled *Never Alone 2*, which will hopefully surpass the attention and love the first part garnered.

With their dedication to inclusivity, the E-Line team also paved the way for others to do the same. Writing proudly, explicitly about their collaboration with elders, historians and other tribe members, along with their direct involvement in the narrative and asset production, it serves as a blueprint on how inclusivity is done right without talking over the people the game is about. When future game creators choose to assist a cause close to their heart, they can look at the post mortem and development journey of *Never Alone* and use them as a guide for their own projects. *Never Alone* is proof that anyone can do good and create something valuable through just about any medium, we just have to want it enough.

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PLAYINGFIELDS

BY
MARIE
TAEGER

TO

BATTLEFIELDS:

VISITING THE GAMESCOM BOOTH OF THE GERMAN ARMY

AS OPEN WORLD AS IT GETS

When gamers visited Gamescom in 2018 they may have been excited to see preview material of *Call of Duty: Black Ops 4* or the new release of the *Battlefield* series. They would have been less likely to expect to encounter the same marketing language and cinematic filters used by popular shooters on posters advertising the German Army.

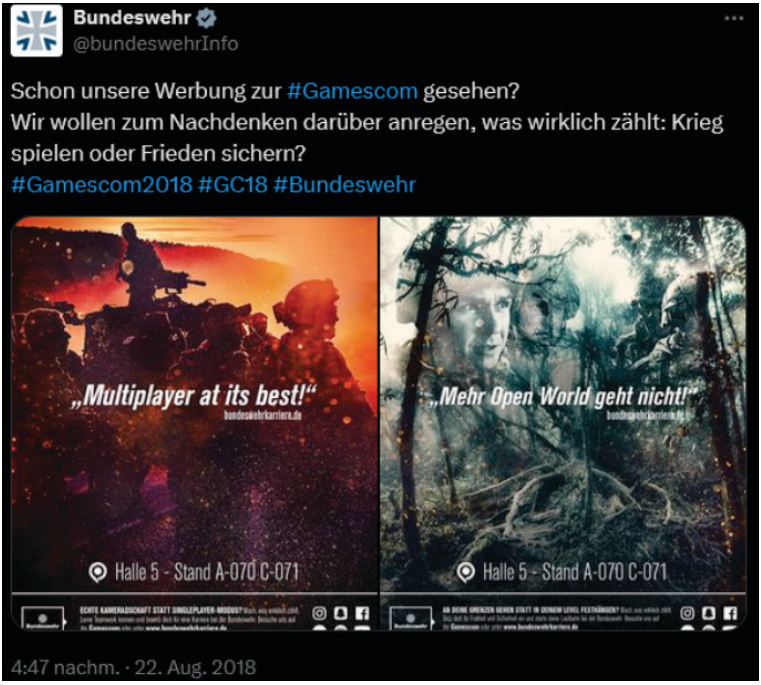

Fig. 1 Advertisement for the Bundeswehr at Gamescom 2018.

When the above images of these posters were shared over multiple social media outlets, they ignited a discussion on the role of the military in the gaming world. Many people were unpleasantly surprised by the practice of placing recruitment material for something as serious as war into a space that most associate with entertainment, innocent fun and escapism. In their response (also depicted in the image above), the Bundeswehr argued that we should all consider what really mattered, whether it was to "play war or [to] secure peace". However, the Bundeswehr's manual on wargaming - the practice of militaries using games as tools for planning and training - states explicitly that the reason they are looking more thoroughly into using games is to prepare the German Army for war. Seven years later I decided to visit the Bundeswehr at Gamescom to see what has changed since then and what has stayed the same.

The first thing that one will notice before even arriving at the army's booth is that it is not nestled in between the latest ego-shooters in the "entertainment area". Instead it is firmly located in the "campus area" - the careers section of the convention - next to other government agencies such as the BND (Bundesnachrichtendienst) as well as private companies such as Edeka or Siemens looking for new employees. Notably, arms manufacturers such as Rheinmetall AG and Thales, which have been accused of illegal arms trade and war crimes (Desai, 2022; Bhriain and Akkerman, 2024) were also around the corner from the Bundeswehr booth, although they drew far less social media attention.

Fig. 2 Booth of the Bundeswehr at Gamescom (24.8.2025).

A NEW FACE

When finally arriving at the crowded booth, I was greeted by 'gamified' slogans similar to those that could be found all over the city of Cologne: "Ready for the next Level?", "Strategy, Co-Op or Speedrun?" However, the graphic design of the booth and the posters were noticeably different from the style of what had caused outrage just a few years prior. Everything was in plain army green and camo. The photos were not stylized. If it was not for the language, it would have all seemed very sleek and corporate. I could tell that the interest of the public was significant; the 150 sqm booth was packed with visitors of all ages with young people signing up for career talks left and right, parents taking photographs of their young children in a utility terrain vehicle and a line to try out the flight simulator. All in all, there were twelve smaller stations presenting different activities in the army.

Fig. 3 Bundeswehr Advertisement "Everyone searches for teamplayers. We make them." (21.8.2025).

Despite all the gamer language, the booth organiser and "Regierungsamtmann"[1] Maximilian insisted that their goal here is to strictly distance themselves from gamification. So why the presence at the world's largest games exhibition, I cannot help but wonder? The official explanation is that the Bundeswehr is present wherever society gathers as it is a normal part of it and seeks to be part of the conversation shaping it. The distancing from games in the official communication not only to me but to other media outlets

[1] Government official, request to be referred to as such.

as well (ZDF, 2025) felt hollow when I looked around. Some visitors were trying out a mini-game about hacking and finding weak points in online platforms. Others were gathering around a table to take turns on the controller steering a tank simulator. The Bundeswehr however does not seem keen to leave it at informing the visitors about their work as every teenager who comes by also has a career leaflet placed in their hand and is encouraged to fill out a form in order to be contacted by a recruiter later.

Fig. 4 Career-Talk by the Bundeswehrs "Zentrum für Simulations- und Navigationsunterstützung".

FLAPPY BIRD AND PSYCHOLOGICAL WARFARE

It also seems strange to talk about distancing oneself from gamification when one of the stations prominently featured since at least 2024 is "MonschiFly", a FlappyBird (.Gears, 2013) clone in which visitors play against an AI that was created by the Bataillon Elektronische Kampfführung 912 (electronic warfare battalion 912). The creator invited me to play a few rounds all the while sharing details about their work. He used MonschiFly as a conversation starter to quickly visualize a use case for AI for a gaming audience. I asked him what they are using AI technology in the Bundeswehr for. Mostly it is used to parse through large amounts of data, he answers. Their battalion for example intercepts electrical signals of any type, even those weak electrical signals that our bodies give off. To handle all of this data, AI is being trained to detect what is important. But they are also working on AI voice models, he informed me as I lost for the 14th time. "We can even make them sound super emotional!", he added proudly. Giving me the example of intercepting an enemy group's communication which could then, using the voice model, be given new orders or having old commands taken back. "So, psychological warfare?", I wondered. "Yes, you could say that.", he replied. With an uneasy feeling I thanked him for the conversation and moved on, doubting that this is the impression that the average player is leaving with. An average player that appeared to me to be underage.

Fig. 5 *MonschiFly* at the AI-section of the Bundeswehr booth.

One station however was labeled “adults only”; the tank simulator. In the back of the booth, four monitors were set up to simulate the different positions of a tank crew. While on the other side of the desk children were driving around a virtual training ground in the driver and command seats, the gunner chair was off-limits to them. The personnel seemed to be aware of their public image. “Imagine what it would look like if we were training kids on weapons”, the instructor told me. Then I had a go on the controllers, learning to shoot with different types of ammunition at digital training houses and cardboard people. The tank instructor informed me that the controller I was using was the very same that was used in training and in the actual tank itself and praised how I was instinctively moving it correctly when shooting the machine gun and the missiles with optical guidance. Of course I am not the first person to notice the striking similarities between what video games teach gamers about weapons, controlling drones and the like. Only recently soldiers of the IDF (Israel Defense Force) compared the experience of using drones with grenades on civilians to that of playing a video game:

> THIS TECHNOLOGY HAS MADE KILLING MUCH MORE STERILE," [THE INTERVIEWED SOLDIER] SAID. "IT'S LIKE A VIDEO GAME. THERE'S A CROSSHAIR IN THE MIDDLE OF THE SCREEN, AND YOU SEE A VIDEO IMAGE. YOU'RE HUNDREDS OF METERS AWAY, [SOMETIMES] EVEN A KILOMETER OR MORE. THEN YOU PLAY WITH THE JOYSTICK, SEE THE TARGET, AND DROP [A GRENADE]. AND IT'S EVEN KIND OF COOL. EXCEPT THIS VIDEO GAME KILLS PEOPLE.
>
> (ABRAHAM, 2025)

The instructor confirmed to me that those soldiers who are used to gaming also adapt much quicker to the controls and bring in greater processing skills than those that don't, something which studies have been investigating and finding to be true for many years (Alexander et al., 2005) and which has just recently been confirmed again by officers fighting in Ukraine (Chemin, 2025). However, in contrast to the US Army, which has used commercial video games prominently in their recruitment and training strategy (Allen, 2017), these play no explicit role in soldiers training in the Bundeswehr, according to the booth attendant.

DEVELOPING GAMES FOR WAR

Fig 6 VBS 4 Simulator at Gamescom.

The reason why modern shooters are so similar to real military simulators can be explained using the example of the software that was shown at Gamescom. The same type of software is also used for all types of vehicle training in the Bundeswehr. It is called VBS4 (Virtual Battlespace Version 4) and is developed by Bohemia Interactive Simulations. The latter name will sound familiar to gamers who are fond of military games as Bohemia Interactive is also the name behind the popular strategic shooter series Arma (Bohemia Interactive, 2006), the game engine of which formed the basis for the first VBS. While Bohemia Interactive Simulations split off and became its own studio creating only simulations for real-world application, both are still very similar; employing experienced game developers since the required skillset has not changed, only the target audience. The Bundeswehr purchased 5000 training licenses and 500 developer licenses from the company to create their own training scenarios.

WHO WE LOOK FOR

We're looking for top performers who are flexible, adaptable, innovative and work well under pressure. We hire for the following roles: Software Engineers | UI/UX Designers | Game Designers | Testers | Business Developers | Technical Sales Support | Game Producers

Fig. 7 Bohemia Interactive Simulations Careers Website.

However, game developers not only work for the Bundeswehr by creating licensed software in third party studios. Increasingly, the German army is also hiring Game Designers directly. The Centre for Simulation and Navigation Support (Zentrum für Simulations- und Navigationsunterstüzung) for example was distributing flyers explicitly listing Game Design as a skill that is sought after for a career in the civilian side of the Bundeswehr, which is made up of 80.000 workers. I met one of them at the AR simulation section of the booth. He explained to me that he began working in the purely entertainment side of the games industry and made the change to the Bundeswehr. According to him, this practice is a relatively new development as the Bundeswehr in the past preferred to train existing personnel for the required tasks internally and only recently switched to bringing in game industry talent. For game developers this can certainly be a more attractive career path as government agencies provide more stability than the regular job market which has seen more layoffs in the past year than ever before (Patel, 2024).

The man told me more about the realities of working for the armed forces as a game developer. The pay is not the greatest but it comes with free healthcare and bonuses are paid out for family members. Additionally, the rents near bases are cheap and food is provided in the cantine. Compared to the prospect of the crunch-filled struggle that comes with an average commercial release, he makes working there sound quite appealing. Of course the projects are usually less glamorous and have little to do with games - at the booth they are presenting an AR map of Sicily which was used to plan out the construction of an airfield. The more eye-catching device which is doing the most in attracting gamers this year is the flight simulator. This however is not made by the army but by Hologate, a German company that is also catering to both the commercial and military market, offering immersive simulations.

Fig . 8 Flying Simulator with Hologate technology | ZDF Heute reporting (22.8.2025)

THE BOOTH IN THE MEDIA

What has changed in public perception is reflected in the differences in reporting back in 2018 (Deutschlandfunk, 2018) and now (Mazur; Schellenbach; ZDF, 2025). When reading the reporting at the time one might get the impression that the presence of the Bundeswehr booth itself is receiving a lot of criticism. In hindsight, much of the critique is directed towards aesthetical choices made by the armed forces, creating the impression that war is similar to a game.

Adopting a more neutral, restrained design for their advertisement campaign was enough of a change to have the public largely lose interest, with the exception of anti-militarisation organisations, whose viewpoints are still occasionally presented (n-tv, 2025). The main point of contention in the articles released in 2025 was how effective the exhibition really was, highlighting the Bundeswehr's recruitment numbers that are still lagging behind their declared goals. Of course this shift in public opinion also has to be seen in the context of the geo-political moment. The all-out war between Russia and Ukraine has certainly changed perceptions of the army. Increasing the number of soldiers is now supported by 65% of the German population, up from 47% in 2018 and 18% in 2013, before the annexation of the Krim (Graf, 2025).

Fig . 9 Booth of the German Peace Organisation of Conscientious Objectors (DFG-VK) outside Gamescom

This trend is also represented in the recent study by Bitkom Research on gaming in Germany in 2025 which, alongside the regular demographic questions now also asked participants about their opinions on the usefulness of gaming for the Bundeswehr, given that the Ukrainian army is now purposefully seeking out skilled gamers to recruit as drone operators (Chemin, 2025).

CONCLUSION

As I am leaving the convention halls I am left feeling conflicted. The seriousness of armed conflict and the demands for national security seem to stand in stark contrast to the jovial spectacle of Gamescom. And yet the army has co-existed comfortably in this space for over sixteen years now. The impression that I am left with, seeing the young visitors and reading many interviews in newspapers, is that as long as the aesthetics of this partnership stays within an undefined boundary of "good taste", it is acceptable for most recipients.

As someone with very few touchpoints with the military, I have learned much about the Bundeswehr and warfare. After all, this is the declared mission of the booth organizers. And yet I am left with the impression that this is not due to playing warplane-Flappy Bird, that these gimmicks would not be necessary to answer the questions of interested young people. Flying a helicopter simulation for a few minutes gives a rather distorted image of life in the military rather than the clear information they claim to want to provide.

The Bundeswehr spokespeople insisted that they wanted to firmly distance themselves from any signs of gamification of the army and warfare. The language of games may have been dropped from the official posters, yet it has found its way even into the seemingly innocent recruitment props. On the snack-filled cardboard-box I received as a gift at the Bundeswehr booth, I read "Limited Lootbox".

IMAGE SOURCES

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OBSERVABLE CURB-CUT EFFECT IN 'CELESTE'S ACCESSIBILITY FEATURES AND PLAYERBASE DISCOURSE

BY
SHIMSHON
SCHNEIDER JESELSOHN

The curb-cut effect describes how features designed for disabled or impaired users produce benefits for broader audiences. The term *curb-cut effect* comes from sidewalk curb cuts originally built for wheelchair users, which were soon found to benefit many other groups as well, such as parents with strollers, travelers with luggage, and delivery workers. While this concept is well-studied in fields like urban planning and digital media, its role in video games remains underexplored.

To this effect, I undertake a qualitative case study with player discourse analysis centered on *Celeste* (2018), an independently published game about climbing a mountain while confronting themes of anxiety and self-doubt. Rather than offering a full comprehensive overview of the game, the study's focus is on how specific accessibility features function across visual, motor and cognitive domains, and how players discuss and work out the impact of these features in public online spaces.

METHODOLOGY

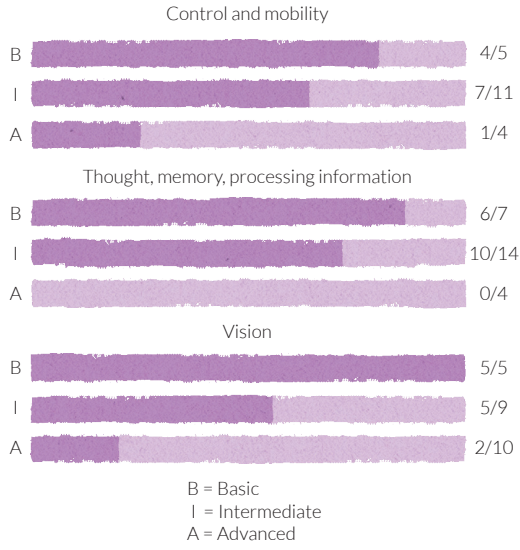
To investigate these dynamics unfolding within *Celeste* and its community, I adopted a methodological approach that examines both the game's design and the social contexts in which its accessibility features are interpreted by the playerbase.

First, *Celeste*'s accessibility options were examined across three domains using a comprehensive set of criteria as a reference framework: the *Game Accessibility Guidelines* (GAG), an open-source, comprehensive set of criteria that can be used by independent developers to assess accessibility implementation (Ellis et al., 2017). I additionally reviewed literature relevant to accessibility in videogames in order to establish a framework of analysis.

Second, I analyzed *Celeste*'s prominent features in three accessibility domains: *visual accessibility*, *motor accessibility*, and *cognitive load reduction*. This feature analysis is complemented by observations of player discourse across online communities, which offer insight into how accessibility options are adopted, adapted, and socially engaged with.

THEORETICAL FRAMEWORK

IN THIS PAPER, THE CURB-CUT EFFECT IS NOT TREATED AS A GUARANTEED OR ASSUMED OUTCOME OF ACCESSIBLE DESIGN, BUT AS AN EMERGENT PHENOMENON OBSERVABLE THROUGH THE INTERACTION BETWEEN GAME DESIGN CHOICES AND PLAYER EXPERIENCE.



To begin, I evaluated the current version of *Celeste* (v1.4.0.0) across the three chosen accessibility domains using the *GAG*. Each guideline section is divided into a Basic (B), Intermediate (I), or Advanced (A) sub-section. Some items in the list are beyond the scope of this 2D platformer, such as VR settings or multiplayer accessibility features, therefore excluding these allows for a more accurate representation of the game's accessibility assessment. For control and mobility, *Celeste* scores B=4/5, I=7/11, A=1/4. For thought, memory, and processing of information, *Celeste* scores B=6/7, I=10/14, and A=0/4. For vision, *Celeste* scores B=5/5, I=5/9, and A=2/10.

When treating each sub-score equally, the average accessibility score across all nine measures is 40/69 or approximately 58%, indicating a strong foundation yet moderate overall level of accessibility support for a 2D platformer.

Following the assessment, I reviewed three papers that are particularly relevant to this study:

First, empirical work by Heydarian and Prewitt (2020) demonstrates that curb-cut effects are already observable in gaming, with nondisabled players frequently using accessibility features for comfort or convenience. In their survey of adult players, they found that a majority of nondisabled nonimpaired participants do use accessibility features to enhance their gaming experience (p. 22), concluding that the curb-cut effect is apparent in the video game environment. Among their survey responses, several answers state that features such as subtitles, colorblind modes, and simplified visual settings are widely adopted by nondisabled and nonimpaired players for reasons of comfort, clarity, or convenience.

Second, Reid (2022) cautions that celebrating such spillovers can obscure disabled players' needs. Spillover narratives, he argues, risk subordinating disabled people's needs to nondisabled convenience (p. 6), producing insufficient accessibility measures. Reid highlights how popular features such as colorblind modes or subtitles may lack the depth required by their intended users, reflecting what disability scholars call "disability dongles," which are superficial fixes that gesture toward inclusion without addressing real barriers (p. 11).

Third, Baltzar et al. (2023) provide evidence that accessibility features alone do not guarantee meaningful access for disabled players. In their survey (p. 134), 33% of gamers with disabilities reported avoiding multiplayer games due to fear of being perceived as "too slow," even when adjustable speed settings were available. They also identify setup burden as a major deterrent, noting that many players do not use accessibility features because configuring them is time-consuming or overwhelming. These findings reinforce Reid's critique by showing how stigma, social pressure and practical barriers shape whether accessibility features are used as intended.

These perspectives together frame *Celeste* as a compelling case for examining both the benefits and the tensions that arise when accessibility features circulate within a diverse playerbase.

ACCESSIBILITY FEATURES, PLAYER DISCOURSE, AND THE CURB-CUT EFFECT IN CELESTE

Fig.1 Options Menu from the game *Celeste* (Thorson and Berry, 2018)

VISUAL ACCESSIBILITY

The latest version of *Celeste* (v1.4.0.0) as of this writing offers several options for visual accessibility, including screen-shake reduction, a photosensitive mode, and adjustable visual cues.

These features improve comfort for players with sensory sensitivities while also benefitting others who simply prefer a smoother play. Screen-shake reduction minimizes disorientation during fast platforming, photosensitive mode increases contrast to make hazards and ledges clearer, and customizable indicators like dash or wall-grab cues temper learning without removing challenge for experienced players.

At launch, however, the game drew criticism for its then-limited options. A 2018 essay published on *Medium* remarked that the game's menu had "only [...] one accessibility-related setting," and jokingly warned motion-sensitive players "getting nauseous at the screen shaking... tough luck, pal." In swift updates, the developers *did* add the shake toggle as the author remarked in a footnote "[...]an option to remove screen-shake was added, thank you so much." (Silver, 2018) This change was clearly appreciated by many players. For example, one Reddit user advised turning off screen shake, adding, "I didn't figure to check the options carefully and only found out then that there is an option to disable screen shake. For me it really made it easier to manage the chaos that happens in the harder levels." (Sbsvn, 2018)

One commenter who stated they usually like the screen shake even had to turn it off at a specific section of the game. (NurmairSalmalin, 2018) Steam community comments echo this by stating they highly recommend turning screen shake off as it makes the movement feel a lot smoother (BirdoPrey, 2019), while another concluded "there's no reason to keep it on" if it hinders play (Camden, 2019).

These adjustments illustrate what Reid (2022) favors in the curb-cut effect: accommodations designed for specific needs end up improving quality of life for all. The positive reception across the community shows that inclusive design in *Celeste* not only ensures access but also enhances the shared experience of play in the playerbase.

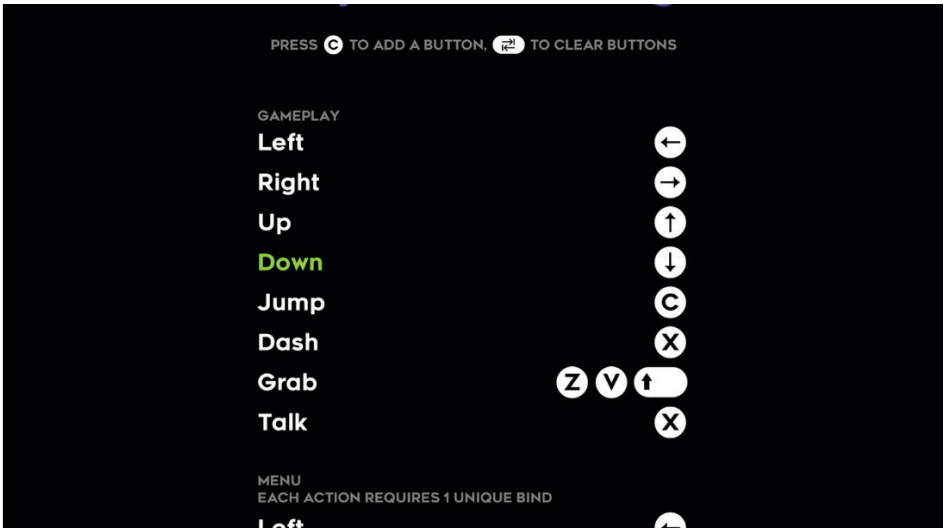


Fig.2 *Celeste*'s Keybind Remapping Menu.

MOTOR ACCESSIBILITY

Celeste is an unforgiving platformer built around precision inputs like jumping, dashing, and climbing, which all demand tight timing and repeated button presses, leaving little room for error. For players with motor impairments such as limited dexterity, slower reaction times, or fatigue, these mechanics can create overwhelming barriers. Climbing sequences in particular add strain by requiring repeated stamina-draining inputs. So for *motor accessibility*, fully remappable controls (as shown in *Fig. 2*) allow players to adapt the platforming mechanics to their physical needs, while also benefiting players who prefer unconventional setups.

In addition, the developers created *Assist Mode*, which allows players to slow game speed, enable infinite dashes or stamina, or even toggle invincibility. These customizable options reduce the physical demands of precision play while maintaining player agency, since each setting can be adjusted individually. Crucially, *Assist Mode* is framed by the developers themselves as a legitimate way to experience the game, not as "cheating."

This balance ensures accessibility without diluting challenge, letting more players engage with *Celeste*'s flow.

Fig.3 *Celeste*'s Assist Mode Settings.

COGNITIVE LOAD REDUCTION

Cognitive accessibility in *Celeste* is shaped by how it balances clarity, learning, and difficulty. As stated above, its multidimensional support provides adjustable game speed, infinite stamina, and invincibility (as shown in *Fig. 3*) through the optional Assist Mode: features designed for players with temporary or permanent cognitive impairments who struggle managing high stress or timed tasks.

Fig.4 Dash Assist's Time Pause.
Left: Pause time to choose direction — Right: Controlled Dash

To climb the mountain is the simple and persistent goal of the game, with chapters offering clear endpoints. Strong visual and auditory feedback keep progress at the forefront, while early levels introduce simple mechanics gradually in safe spaces before demanding precision. This minimizes confusion, but players may still struggle once mechanics stack quickly, creating very steep difficulty spikes – the so-called 'hitting a wall'.

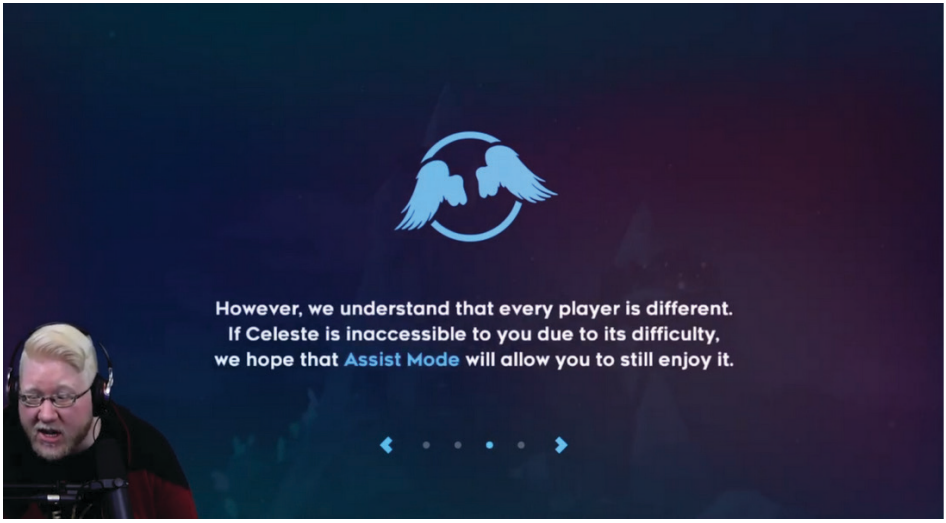


Fig.5 *Celeste*'s Assist Mode Confirmation Slide. Timestamp: 9:05.
Screengrab from YouTube video 'BLIND GAMER uses Assist Mode in Celeste' (Saylor, 2018).

Players frequently describe assistive options as empowering rather than patronizing. One reviewer from a CriticalHit.net article titled *'Celeste: It's okay to ask for help'* noted that Assist Mode "never belittles or teases the player for wanting to make the experience slightly easier," instead affirming that one should play "in a way that is suited for [you]" (Lang, 2019). To them, Assist Mode seemed to function as a criticism of the "'Git Gud' culture" in the competitive platformer playerbase. Similar sentiments could be found on Celeste's own Reddit discussion board, where the mode is praised for allowing everyone to "fully experience all the game had to offer, regardless of skill level or capabilities" (the_sleemaster, 2025), stressing there is "no shame" in using assists. "You create your own Quality of Life" (carrarium, 2025) is perhaps the ideal of quality accessibility that Reid argues for, and the inherent philosophy of the Curb-Cut Effect.

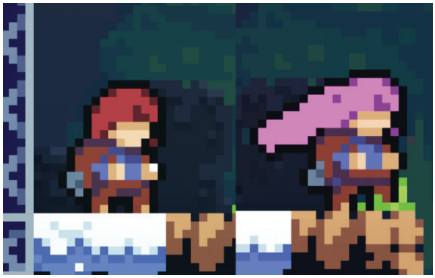


Fig.6 Visual indicator of *Celeste*'s Air Dash assist being active.
Left: Air Dash 'Default'
Right: Air Dash '2' or 'Infinite'.

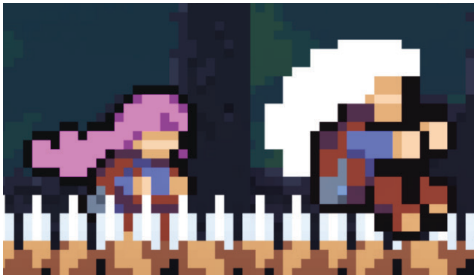


Fig.7 Invulnerability effect. Spikes represent lethal obstacles.
Left: Player with invulnerability
Right: Player without invulnerability.

In the *gamedev* subreddit, *Celeste*'s Assist Mode was held up as a model because it shows that accessibility is about control over the game, not removing challenge, but letting players "tweak [it] to a level that is not beyond their limit" and that by "giving players the ability to tweak those things you make it actually accessible to them" (DaveSilver, 2023). What is striking to see with the Assist Mode's curb-cut effect is that even parents have shared how their smaller children gained confidence through it:

> "AFTER APPLYING 90% SPEED, 3 DASHES, INFINITE STAMINA AND INVINCIBILITY, [MY DAUGHTERS] STARTED COMPLETING SCREENS… ONE SAID, 'I LOVE DASHING, IT'S LIKE I CAN FLY!'"
>
> (MAXOSI, 2018).

Yet not all reactions are positive.

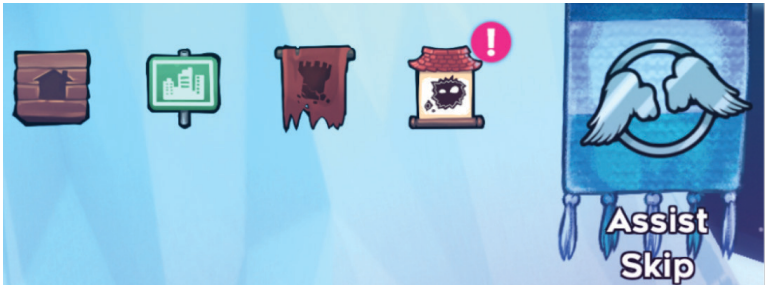


Fig.8 Skip feature enabling chapter skips. Chapter select menu.

Some players worry that assists undermine achievement and ruin the challenge. On Steam, under a thread titled 'Assist mode is extremely broken', one user complained: "I'm gonna go beat this whole game with invincibility on! […] it's not fun anymore, it's not challenging anymore, what is even the point of having this in the game?" (EeveeTV, 2023) Others argue that achievements should remain for people who take effort in the game (TonyShape, 2023). Even supportive players sometimes express guilt, saying that lowering speed or using invincibility "felt cheap." Accessibility advocates, among them Clinton Lexa note that this ambivalence was partly reinforced by the game's original wording, which implied assists were a *last resort*. After community feedback, the developers rephrased it, and Lexa emphasizes today that accessibility features "empower disabled people to actually get the intended experience," no more than a "wheelchair ramp ruins stairs." (Lexa, 2019; *halfcoordinated*)

Altogether, *Celeste*'s Assist Mode illustrates the duality of accessibility discourse: for many, it is celebrated as the gold standard in enabling control, inclusivity, and joy; for others, it creates strong feelings around difficulty, legitimacy, and pride. What remains clear is that its design reveals the importance of disability-centered options that broaden access.

CONCLUSION

This study shows how accessibility features can provide curb-cut effects that extend beyond the original target audience. The player discourse around it, however, mires the benefits in stigma.

Inclusive design as a foundational practice rather than an afterthought can potentially reduce these post-launch headaches. Accessibility should be designed from the start, echoing Reid's critique of post-hoc fixes, something that *Celeste*'s devs had to resort to with the Shake Screen toggle option post-launch, in combination with curb-cut features like core gameplay customization, as in the example of *Celeste*'s Assist Mode. And finally, accessibility should be normalized across all player communities by encouraging open discussion and use of accessible features among gamers at every level, since community attitudes, and persistent toxicity, remain a significant deterrent for many players.

Based on observable curb-cut benefits from this game's Assist Mode which were a result of player input, I suggest a more collaborative accessibility design, building from where curb-cut effects succeed or fail across different genres and production priorities. It is an approach that could provide developers with actionable insights, which challenges the industry to embrace accessibility as a competitive design advantage rather than a constraint.

The next generation of accessible games could be defined not by checklists, but by ongoing inclusive collaboration with players.

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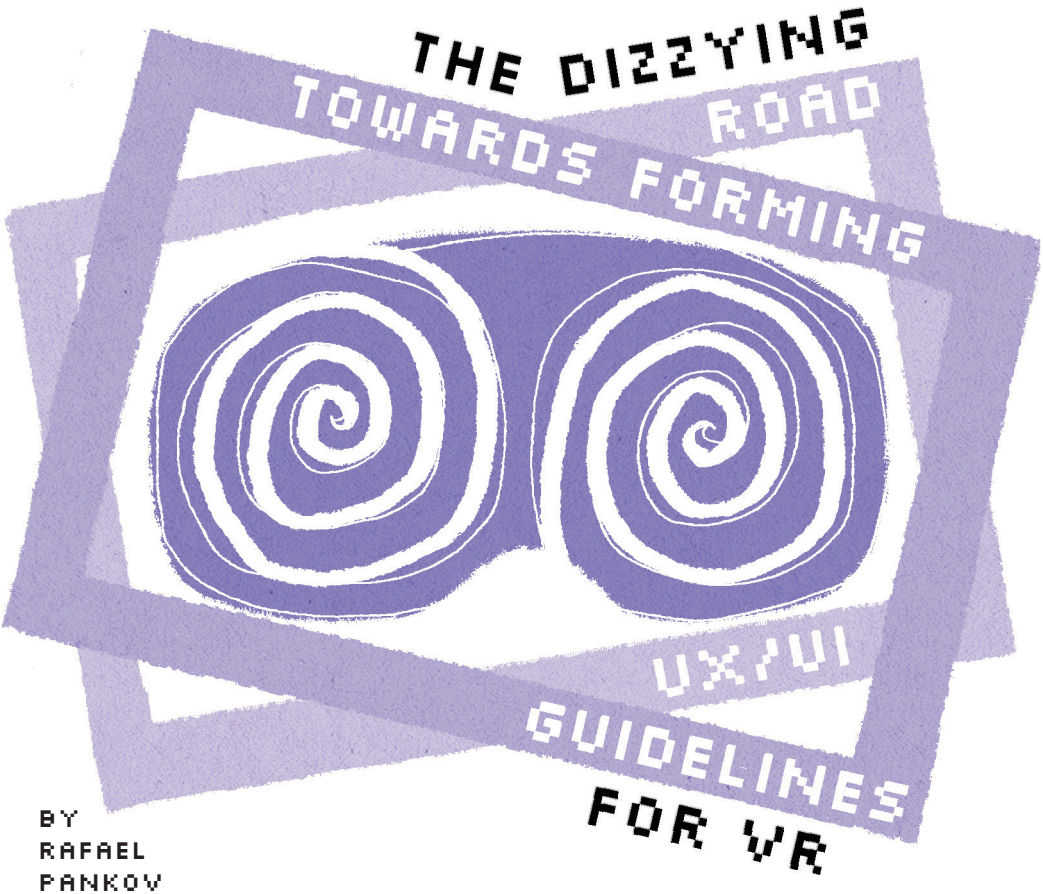


BY
RAFAEL
PANKOV

Donning a VR headset throws you immediately into new worlds - worlds that are fantastical, dramatic, and most importantly, seem to envelope and immerse you entirely. This awe and wonder has the potential to give people unforgettable experiences, and for some, a quick trip to the floor. It's not uncommon that a person's first experience with VR is a mix of awe and disorientation, and for some, that disorientation doesn't seem to fade away. To what extent the population of gamers experience motion sickness symptoms is difficult to measure accurately, but suffice to say that one needs to first gain their "VR legs" before interacting further.

There are a few reasons why motion sickness occurs. In digital games we experience vection - the illusion of movement while not experiencing movement. The subsequent mismatch between perception and the vestibular system is what causes one to feel sick to various degrees of severity. In other words, our eyes see something that our brains expect to feel physically, but the lack of sensation on the body throws up errors that can manifest in a myriad of symptoms. What have VR games done to address this, and why bother? By looking at a few examples of design choices and UI, we may gain some insights to where some VR games have gone wrong.

SIMULATOR SICKNESS

This phenomenon of feeling ill from movement or the illusion of movement isn't new or wholly unique to VR. In fact, this sensation has been long known of and extensively studied in industries outside of games. "Simulator sickness", as it is known in military and aviation contexts, has been extensively investigated since the 1950's when simulators were introduced for training purposes. The unintended effect of trying to safely train pilots was making them ill, and this clearly was an issue that had to be further investigated and resolved.

> INTERESTINGLY, FINDINGS POINTED OUT THAT MORE EXPERIENCED PILOTS SUFFERED THE MOST, AS THEIR BODILY SENSATION EXPECTATIONS OF REAL FLIGHT DID NOT MATCH THE SIMULATOR'S LIMITED STIMULI OUTPUT.

The proposed treatment for simulator sickness in these instances, was to continue simulator training, as repeated exposure to the simulator would eventually dampen the symptoms as pilots would have no choice but to adapt (Johnson, 2005).

Fortunately, as digital games became an industry of its own over time, developers have had a chance to create more helpful tactics to remedy similar symptoms. This is important, as there is a difference in context between a mandated military training exercise in a simulator and an optional, likely purchased for enjoyment, game meant for entertainment. It is typically in the developer's best interest to not sicken their customer or fan. Therefore, there is more leeway in games to design less around realistic physics and scenarios and focus more on the user experience being as positive and possible.

AVOIDING THE SPIN

One of the most useful tools to ease motion sickness symptoms is to have a clear frame of reference. For example, our screens and displays typically have distinct frames around them thanks to how devices with displays are designed. We could also consider these displays 2D, as they are usually depicted on flat screens, regardless of the device being a large TV or portable console. Unfortunately, for some players, this display reference frame isn't enough, and motion sickness may manifest during play despite the assumption of them being safe and stable by virtue of being 2D displays (Chen et al., 2024).

As games meant for far away screens have existed for a few decades, there are now known design tips and tools available to help ease 2D display based motion sickness symptoms. From the game developers end, there are a few subtle design choices that can be implemented (Sakurai, 2023). Simple solutions include providing another stable frame of reference in the game itself, adding a marker for the screen center, and adding a vignette. There are more in-depth options that can be provided for players to edit themselves as well, such as head bobbing, motion blur, and bloom or other visual effect toggles. Even further, more technical options can also be of use, for instance the ability to adjust the field of view (FOV), and ability to adjust the frame rate (frames per second, FPS) have emerged as desirable features to have accessible by the player (Bos et al. 2010, Grubb 2018).

When it comes to VR, various causes of sickness affect the user at different degrees of intensity, which makes it more challenging to pinpoint and remedy. (Chang et al., 2020). Factors such as the hardware quality itself can cause issues as the screen must be close to the eyes, as for example, screen flickering from refresh rates have beenreported as problematic in the past. The depth of field, FOV, andeven the levelof graphic fidelity or realism also had interesting results. Namely, the intent tocreate more realistic scenes seemed to increase user discomfort, as thediscrepancy in thenuances of what weexpect from realistic scenes weren't achieved in the simulated realisticscene. A particularly important factor for VR is the senseof control the user has, and more specifically, refers to movement and locomotion.

MOVEMENTS OF THE AVATAR NOT CONTROLLED BY THE USER SEEMED TO YIELD MORE EXTREME SICKNESS SYMPTOMS, MUCH LIKE HOW CAR PASSENGERS ARE MORE LIKELY TO EXPERIENCE SICKNESS INSTEAD OF THE DRIVER.

(DONG ET AL., 2011)

ACCESSIBILITY AND USER EXPERIENCE

Providing options that the player can adjust themselves is both an accessibility feature as well as a plus towards the user experience. Both of these things then affect the ultimate interface design, where everything should be designed and work in tandem. The relationship between accessibility and user experience is a close one, asthe widening of access to anything usually improves a user's experience. This is also known as the curb-cut effect, (Blackwell, 2018) and in games it has manifested in various ways. For example, subtitles in games were once thought of as only an accessibility feature for those hard of hearing, now they're expected. One strong example of a game with many accessibility options was *The Last of Us Part 2*,where numerous options are available for those with visual, hearing, or motorimpairments. Options such as the ability to disable distracting camera movements, toggling auto-aiming, skipping quick-time events or puzzles, and more, only make the gaming experience easier for everyone if they chose to use these features.

Of course, all these features work well on a 2D display. Presumably, a player sits at a reasonable distance from the screen and hopefully achieves a sense of immersion or flow. Well-designed UX and UI, which can be improved by the player's accessibility needs being met, helps foster smoother and more enjoyable gaming experiences. On this note, it could be fair to say the 2D digital games space has come quite far in their development of UI/UX frameworks.

THE DIFFERENCE

In comparison to the popularity of games confined to screens, VR adoption seems to lag behind (Brookes, 2025). 2D games have had decades to mature and have developed dependable UI/UX guidelines along the way. Meanwhile, VR still struggles to capture larger audiences. Of course, there are also the economic issues that hinder the wider adoption of VR, as it demands the affordance of the initial price, having compatible hardware, and space for safe play. Additionally, it doesn't help VR's case that when one can finally don a headset, that they might end up finding themselves motion sick and confused.

The level of immersion is also different between the two. Regardless of which, most developers desire to envelope a player into their crafted world. With games bound to 2D screens, there is always a constant aim to achieve as much immersion as possible. The games must either have a compelling world, narrative, mechanics, graphic fidelity, sound, or other attributes to successfully capture a player's attention to draw them in. However, one immersion breaking bug, or inconvenient UI/UX interaction, or real-life distraction can turn a player away from the game screen. Thus, breaking the immersion. Chasing after immersion and retaining attention seems to be at the forefront of typical 2D game development.

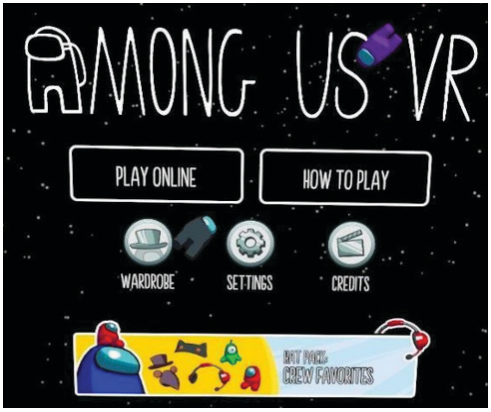
VR HAS A GREAT ADVANTAGE IN ACHIEVING IMMERSION WHEN COMPARED TO 2D SCREEN-BOUND GAMES. WITH A HEADSET ON, ONE IS IMMEDIATELY IMMERSED INTO A NEW 3D SPACE. THERE IS NO FRAME, NO BORDER, NO WINDOWS TO OVERCOME – AT MINIMUM THERE IS A SIMULATED GROUND PLANE THAT VAGUELY MIMICS THE WEARER'S BODILY PERCEPTION OF WHERE THE GROUND SHOULD BE.

The struggle to convince the player they're in a game is now moot, as their reality instantly is changed around them, with no build-up of game worldbuilding or engaging gameplay needed.

OLD APPROACHES ON NEW IMMERSIONS

The way a VR headset erases the barriers to immersion is an exciting feat, but the decades of experience developing for digital games meant for 2D screens seems to hinder development of UI/UX. While the base of knowledge is useful, this wealth of experience was only meant for a specific medium. New approaches are necessary for such a novel new way of experiencing a game.

As VR fundamentally changes how immersion works, developers need to fundamentally change their approach. Jumping from decades of experience designing for monitors to designing for a VR headset is not seamless either. Symptoms of this awkward transition, or reliance on older knowledge and habits, can be inferred from some of the design choices taken when creating the UI.

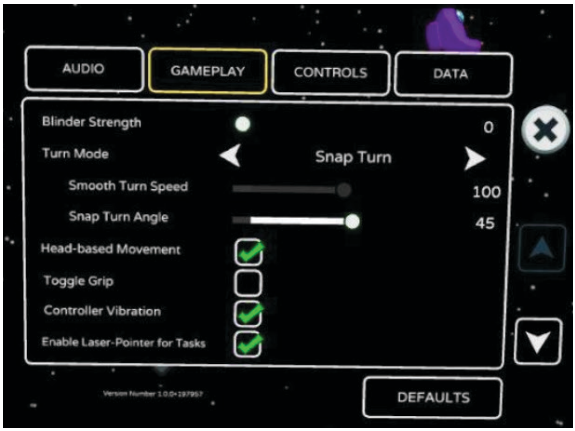


Figs. 1 Title screen from *Among Us Vr* (2022).

The most obvious example of a carry-over habit is putting floating menus on invisible planes in the air. For instance, the viral sensation of "Among Us" (2018) had a 3D VR port released in 2022. Here, we see the title and expected option and settings, but they're displayed as floating 2D planes as one would see on their PC monitor. It could be argued that on one hand, it is still fully functional and fine but seeing a menu one expects to be small on their monitor as something suddenly looming as a wall in front of them is at the very least, peculiar.

Another note to add is how the settings are laid out is no different at all to a typical menu one could scroll through via a keyboard and mouse.

However, during gameplay, information is shared in a cleverer fashion. Here, they diagetically integrate tutorial information by disguising the once abstract floating plane as a floating monitor that has been 3D modeled.



Figs. 2 Settings from *Among Us Vr* (2022).

Fig. 3 In-game tutorial instructions and information diagetically displayed as a floating screen.

"*Beat Saber*" (2019) by Beat Games could be considered one of the default games one should have for their VR system. It's simple, quick to grasp, doesn't ask for complex button presses, and ultimately compliments the gaming potential of VR. However, its start menu and options are rather basic, again featuring simple layouts for options and settings. The options and setting layout mimics what one would see on a flat monitor, with attributes in a list format and toggles to the side if present. For a game lauded as an excellent example of a VR game, the UI seems to be somewhat lacking. It functions well and isn't hugely problematic but doesn't utilize anything unique to the VR medium. At most, the flat planes of menus are displayed on curved planes, which is meant to make viewing slightly easier.

Fig. 4 Several planes or panels display level information in *Beat Saber* (2019)

"*Half-Life: Alyx*" (2020) by Valve introduced more unique UI/UX solutions, better suited for games that go beyond short arcade style gameplay, to a wider audience. Namely, the storage system for items and how player vitals were displayed better highlighted and utilized the handheld controllers that come with VR headsets. Typically, due to technical difficulties, arms that attach to the player avatars assumed body were too difficult to implement, often leaving somewhat off-putting disembodied hands for players to use. Here, the space left for where a wrist would is used as storage for items. The uncanny feeling one may feel from disembodied hands is now occupied by an item slot. The player vitals such as the health is now displayed on the back of the left hand, which can be checked with a similar gesture one may do to check their watch in life.

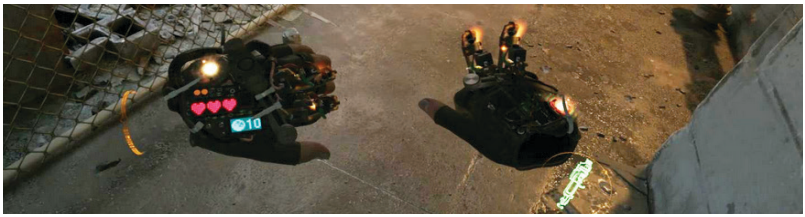


Fig. 5 Player vitals are constantly displayed on the back of the left hand, and the right hand shows that the wrist pocket currently holds an item.

Weapon selection can also be easily done with a simple button hold and simple gesture, making this action quick for tense moments, rather than make the player drop something up or navigate for too long. This use of and placement of information on the hands is an excellent choice, as the hands would be seen throughout play, so to make them useful and engage with the gestures most people can make was a great sign of future potential in VR UI/UX design. At specific locations the player can also interact with menus that diagetically fit into the world as well.

Fig. 6 The player's right hand has the weapon selection menu open. Moving the hand up or down will select and equip the weapon.

Fig. 7 Player interacts with a weapon upgrading station, with the menu incorporated into the machine.

Other, more diegetic and humorous design choices also show potential. In "*Job Simulator*" by Owlchemy Labs, the player is surrounded by various interactable objects while mock-roleplaying jobs. Levels are presented as cartridges, which must be picked up and placed into a machine, then the player must pull a lever to enter. Instructions and clues as to what can be done in the level are placed into the world the player can examine. Instructions for the simulated job are audibly said and displayed on a diegetic screen, but exploration and breaking the rules is expected. To exit a level, the player can summon a briefcase and open it to reveal a few items inside. One item, if inspected, reveals the game credits, while the other item is a burrito that must be fully eaten to exit. Why a burrito sends the player back is left up to interpretation. While mechanically the gameplay is rather simple, the choices taken to go beyond a typical flat 2D medium.

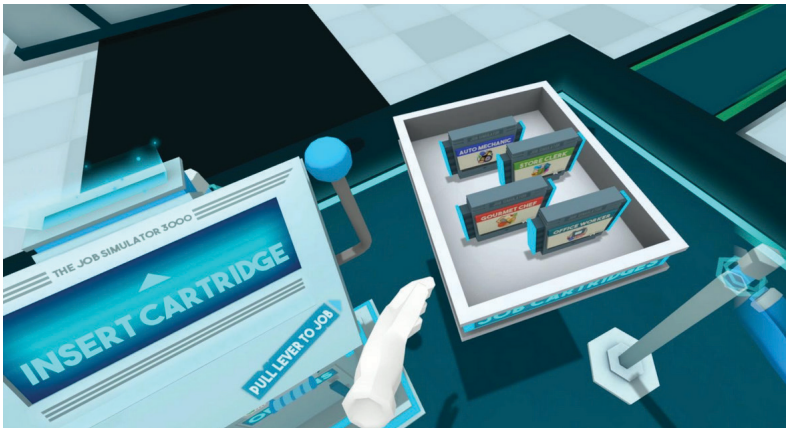


Fig. 8 *Job Simulator* level selection, and confirmation machine.

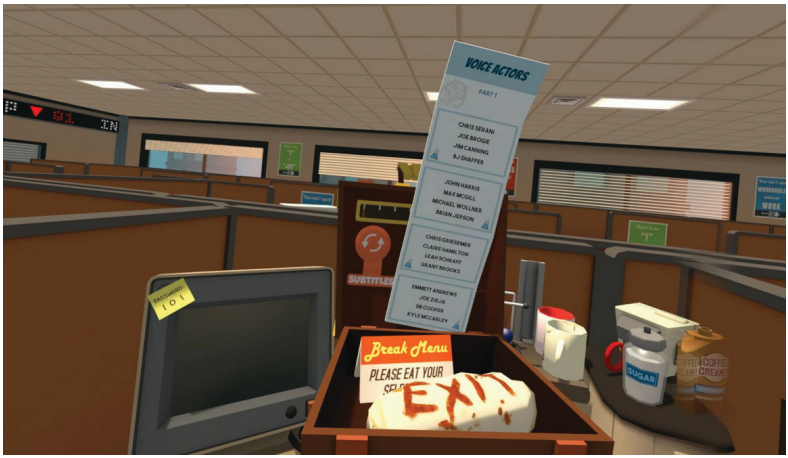


Fig. 9 The pause/break menu suitcase, showing the credits being examined, as well as the EXIT burrito that can be eaten.

THE PATH AHEAD

VR is an exciting way to engage with games, as the immersion is effortless, however it faces huge obstacles to wider adoption. The most obvious road bump is the motion sickness, which is worsened with the lack of care taken in how the UI and UX is executed. As the small bumps and awkward design choices mount, it yields an overall, unpleasant, unsatisfying experience. This is not the fault of individual designers, but more likely a symptom of a reliance on knowledge learned from decades of game development meant for 2D screens. However, it can be possible to hasten the improvement of VR UI/UX by focusing development on an accessibility first mindset, instead of an immersion first mindset. Reinventing, experimenting, and adapting UI designs to exist in 3D space would further compliment the transition to 3D immersion. Utilizing small gestures in place of tedious button interactions could greatly aid in making interactions easier and more enjoyable to engage with. Shedding old design habits, exploring unusual UI choices, all while championing accessibility and enjoyable UX, could lead to a faster smoother development of VR specific UI/UX frameworks.

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