

## Glitch as a Trans Representational Mode in Video Games

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### ABSTRACT

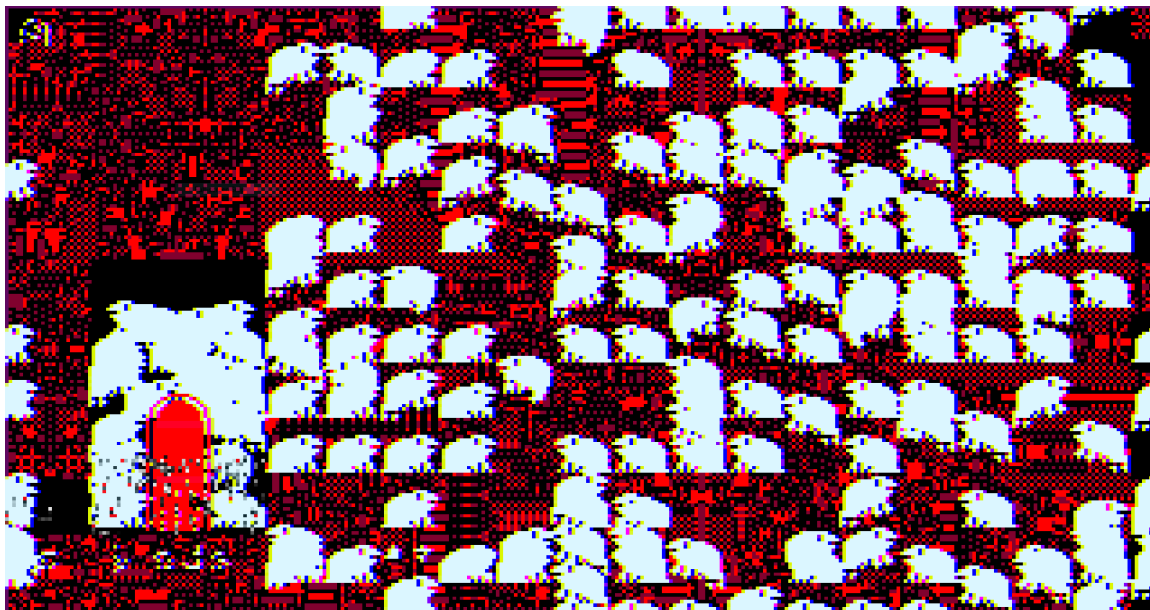
Following recent work by transgender studies scholars that has questioned the relationship between queer theory and trans studies, this essay considers how glitch video games, which have previously been considered as part of the “queer games movement,” use glitch as a way of representing transgender life. I survey three glitch games, *Problem Attic* (2013, Liz Ryerson), *Strawberry Cubes* (2015, Loren Schmidt), and *Anatomy* (2016, Kitty Horrorshow)—each of which uses glitch as an expressive visual aesthetic, remediating the analog artifacts of signal noise or error as a sonic and visual quality, as well as a game design principle. These games place an emphasis on the body as that which glitches, exploring the bad feelings of trans embodiment, including dissociation and dysphoria, as well as demonstrating how the glitched body can be both desired and transformative. In the final section, this essay considers how transgender artists and the ways their work foregrounds glitch as an operation of the body are integral not only to glitch art history, but also to video game development more widely, exploring the influence of glitch aesthetics and game design in *Pony Island* (2016), a video game by cisgender designer Daniel Mullins.

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### INTRODUCTION

*Strawberry Cubes* (Loren Schmidt, 2015) is a glitchy video game. The platforms of this 2D puzzle-platformer flicker as geometric patterns sweep across them with varying degrees of instability. Moving objects are accompanied by staticky audio effects. But beyond these visual and sonic effects, the game *feels* glitchy. During my own play session, I would re-enter a room only to notice that the plates that were on a platform had transformed into bells, and that a pathway previously accessible had suddenly disappeared.<sup>1</sup> Rather than becoming more familiar over time as one might expect with a puzzle-platformer game, the more time I spent playing, the more inconsistent, abstract, and disorienting the game became. The game does not have a tutorial level, so, confused, I turned to a readme file which listed common-to-the-genre inputs—WASD keys or arrows to move, space bar to interact with objects. The last entry in the file was cryptic: “<???> try pressing other keys.”<sup>2</sup> My subsequent experimentations in *Strawberry Cubes* introduced even more noise into the system. Some keyboard inputs triggered a fuzzy synthesized sound and a dithering visual effect: the scene briefly dissolved into an obfuscating wash of pixels. I found I was able to spawn an endless number of frogs, eventually causing my laptop to halt the program (Figure 1). Not only was *Strawberry Cubes* taking up the glitch in its aesthetic nods to file corruption, noise, and signal

error, the game also instituted the glitch as a design principle, challenging normative teleologies of play.



***Figure 1. Spawning too many frogs in Strawberry Cubes (Loren Schmidt, 2015). Screenshot by author.***

This kind of video game design has previously been studied under the rubric of “queer games:” games that challenge normative game design principles and aesthetics. For example, in their keynote for the second Queerness and Games Conference in 2014, game developers Naomi Clark and merriitt k describe the glitch as queer, because glitches “surprise both players and creators through the unexpected interplay of rules.”<sup>3</sup> Edmond Chang also takes up this formulation in his essay “Queergaming,” arguing that queer games present alternatives to “technonormative” ideologies by embracing “noncompetitive, nonproductive, nonjudgemental play, as well as the uncertainty and inefficiency of glitches, [...] different rules and goals, and [...] the radical potential for failure.”<sup>4</sup> In both of these arguments, the glitch is queer because it runs counter to culturally situated expectations for how software, and perhaps specifically video games, should look, work, or play.

However, recent work in transgender studies complicates the relationship between queer theory, feminist theory, and trans studies, noting the many departures and challenges trans studies poses to these other fields.<sup>5</sup> Cultural theorist Cael Keegan articulates a need for trans studies *against* queer theory, noting that the “universalizing trend” in which the nonnormative is aggregated as “queer” obscures and disciplines the field of trans studies.<sup>6</sup> Further, Bo Ruberg’s article “Trans Game Studies” offers “trans embodiment as a powerful form of meaning-making,” noting this as an important methodological orientation in the field.<sup>7</sup> I am interested in disaggregating the glitch, if just for a moment, from the umbrella of queer video game design, posing it as a medium-specific representational mode for trans life and experience. Accordingly, I develop this theory in relationship to games made by transgender, non-binary, and genderqueer developers. In this essay, I explore the ways that glitch aesthetics and glitch game design bring embodiment (both of the player and the representations they control on screen) to the fore. By disaggregating the glitch from

the umbrella of “queer games,” I hope to show how developers are using the glitch to think about gender and the body through computation in ways that a queer-as-antinormative frame alone might otherwise miss.

Rather than think about the glitch *as* trans representation, I look to glitch as a trans representational mode akin to what micha cárdenas illustrates in her attention to “the movements, the operations at work, in trans of color poetics” through the operations of the cut, the shift, and the stitch.<sup>8</sup> In this sense, I look at the glitch as an action or operation, focusing on what it does to games and their players, often in excess of the narrative framework of the games themselves. This is to say that while these games are all authored by transgender, nonbinary, and genderqueer people, they do not narratively or visually foreground experiences of medical or social gender transition. Studies of trans representation in video games that focus on narrative or visual elements, player practices, and fan communities are essential for our understanding of the ways players and developers are thinking gender through computational media.<sup>9</sup> However, my intention in looking towards glitch as an aesthetic of abstraction and a design principle that challenges “technonormative” tenants of video game design is to offer the possibility that transgender designers might be trans-ing game development through the operation of the glitch.

Accordingly, this essay explores the glitch as a representational mode for trans life and experience in video games in the mid-2010s, a period referred to as the “transgender tipping point” in US culture.<sup>10</sup> In this era of heightened visibility, these games use the glitch as a visual and design metaphor for the bad feelings of trans embodiment, like dissociation and dysphoria, as well as to highlight the transformative potentials of trans embodiment. I focus on three games—*Problem Attic* (2013, Liz Ryerson), *Strawberry Cubes* (2015, Loren Schmidt), and *Anatomy* (2016, Kitty Horrorshow)—each of which uses the glitch as an expressive visual aesthetic, remediating the analog artifacts of signal noise or error as a sonic and visual quality, as well as a game design principle challenging normative game design principles.<sup>11</sup>

In the sections that follow, I look specifically at how developers use glitch as an aesthetic and design principle to elaborate trans-embodiment. I start by contextualizing these mid-2010s glitch games as part of a longer history of glitch art made with video game technology. Then I focus on glitch aesthetics in video games, arguing that *Anatomy* uses glitch effects to metaphorize dissociation and dysphoria, two bad feelings associated with trans life. I then turn to glitch as a design principle, demonstrating how both *Strawberry Cubes* and *Problem Attic* glitch game design, using player character representations to transcend generic expectations. Finally, I explore how glitch modulates gendered play in *Pony Island* (2016), a video game by cisgender designer, Daniel Mullins, demonstrating the influence of transgender creators on the larger field of game design.

## MORE THAN ERROR

“Glitchy” usually describes an interaction with technology that feels unexpectedly or unattributably erroneous. But glitches are more than errors. The glitch is traditionally defined as a noise artifact “for which the causes are not (yet) known,” distinguishing the glitch from the nameable and known sources of noise or error in a communication system.<sup>12</sup> Known errors are bugs. Bugs have solutions. Put differently, not all forms of error or noise in a given system are glitches—glitches surprise or baffle because they have yet to be explained or resist such explanations.

Glitch art has a long history with video games, video game engines, and video game hardware. Whit Pow has extensively documented the use of the Bally Astrocade home video game console in what is perhaps one of the earliest examples of digital glitch art, *Digital TV Dinner* (1978), by game developer and artist Jamie Faye Fenton.<sup>13</sup> JODI, an often catalogued net art duo from the Netherlands, have long made use of video game engines in the generation of their glitch art work, including *untitled game* (1996), which is a user-generated modification of the first-person shooter *Quake* (id Software, 1996).<sup>14</sup> Media artist Corey Archangel makes prominent use of ROM-hacked video game cartridges in many works including *Super Mario Clouds* (2002), *F1 Racer Mod (aka Japanese Driving Game)* (2004), and *Super Mario Movie* (2005).<sup>15</sup> Gijs Gieskes uses gaming hardware, like the Nintendo Gameboy Classic and the Sega Megadrive, as the basis for his circuit-bent audio-visual synthesizers. These works are all dependent on pre-existing video game software and hardware, which serves as the substrate for the development of new art works. Additionally, these artists all share a similar creative process, which includes seeking out and exploiting errors in existing technologies and learning to replicate them for their own expressive purposes.

Whit Pow's close look at *Digital TV Dinner* (1978) draws out the importance of consumer video game hardware for glitch synthesis, the history of transgender creators in glitch art, and how the glitch ultimately relates as much to the effect seen on screen as it does to the engagement of the human body. As both a programmer involved in the console's development and a user, Fenton was aware of how this gaming system scripted a certain interaction. Accompanying her YouTube video documenting this piece, she explains, "The Bally Astrocade was unique among cartridge games in that it was designed to allow users to change game cartridges with power-on. When pressing the reset button, it was possible to remove the cartridge from the system and induce various memory dump pattern sequences."<sup>16</sup> *Digital TV Dinner* is the result of Fenton's refusal to engage with that script, proposing another relationship to software and hardware system entirely. For Pow, *Digital TV Dinner* serves as both "a record of the failure of software and a record of trans history, labor, and embodiment, and what could *not* be captured by the computational system: Fenton's hands manipulating the [Bally Astrocade] console [...] to produce these small and beautiful failures."<sup>17</sup> In this example, the glitch is produced through an embodied interaction between Fenton and the console, indexing the normative expectations placed upon video game hardware and software through a design process, and the ways in which this particular system could not anticipate Fenton's playful and deliberate misuse.

If the glitch is a representational mode for transgender life, this is because the glitch simultaneously points to the norms and expectations we have around technology while also insisting upon a different relation. Cáel Keegan offers a similar schematic to describe how trans studies relates to feminist and queer theory:

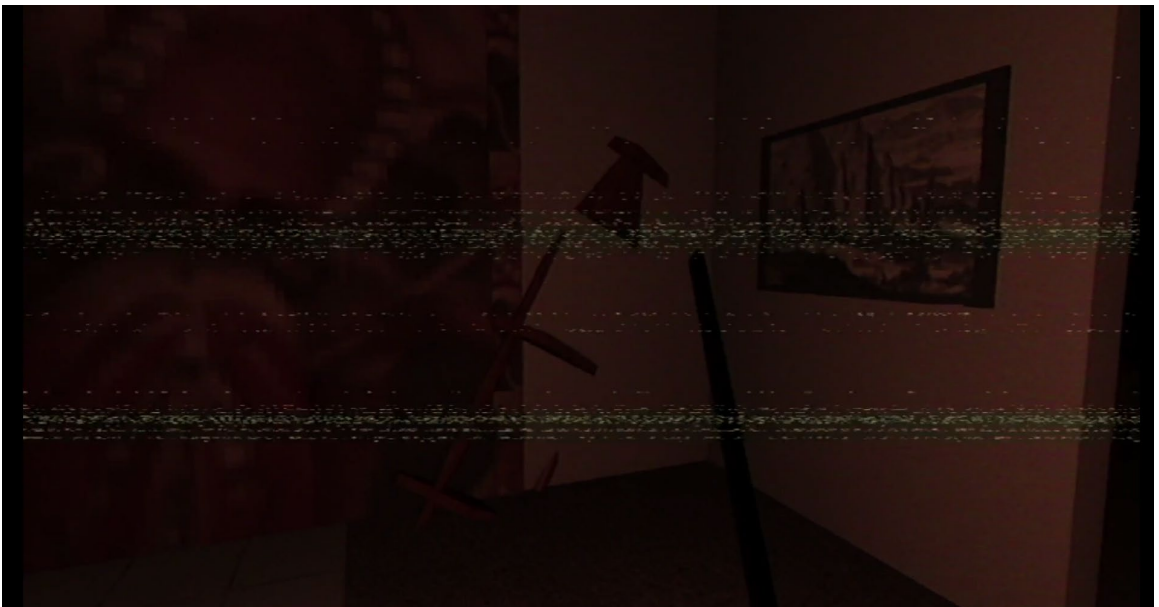
Trans\* studies must perform a *but* that insists against the foundational schema of sexual subordination (M > F), saying *but* gender is *not real like that*. However, in response to queer studies' investment in deconstructing the gender binary (M/F) to unravel heteronormativity, trans\* studies must turn inside out, articulating a constative *but* that asserts *but* gender is *real like this*.<sup>18</sup>

Following this critical work, I am interested in how contemporary video games take up the glitch, often in ways that speak back to the body and its interpellation by normative game design systems. In the sections that follow I discuss two medium-specific manifestations of the glitch, as both an aesthetic and a structuring game design principle.

## GLITCH AESTHETICS AND TRANS EMBODIMENT

The video games I focus on in this essay cannot be said to “glitch” in quite the same way that Fenton’s manipulation of the Astrocade produced glitches. *Digital TV Dinner* is not interactive and is a recording of several memory dump sequences edited together. The video games surveyed in this essay share some of the same formal qualities as other kinds of glitch art, including abstract and pixelated patterns and flickering visual elements, however these effects are often achieved with the aid of third-party asset packages, as well as custom-built shaders, effects, and scripts, all of which “remediate” the look, feel, and sound of analog signal error and noise.<sup>19</sup> This is what I term *glitch aesthetics*.

For example, *Anatomy*, a short horror game by independent developer Kitty Horrorshow, foregrounds the glitch as an aesthetic. This first-person 3D adventure game (a genre also described as a “walking simulator”) takes place in a sparsely decorated home. As the player progresses through the game’s three acts, they collect cassette tapes. When played, each cassette contains an excerpt of a lecture (garbled to varying degrees by noise/static) that establishes the house as a body or organism, drawing allusions between the organs of the body and the rooms of the house.<sup>20</sup> Over time the game becomes visibly “glitchier:” objects move into surreal arrangements within the house and others appear to flicker in and out of existence. As the game progresses, a vertical wipe of visual noise obscures the first-person camera, evoking the gradual degradation of magnetic tape that comes with the passage of time and heavy use (Figure 2).



***Figure 2. Lines of signal noise obscure the first-person camera in the third act of Anatomy (Kitty Horrorshow, 2016). Screenshot by author.***

As an interactive media format, video games engage the body in playful actions like the twiddling of joysticks and the clicking of mouse buttons. These inputs translate into a player’s sense of control over a virtual representation within a game world, often called the player character or avatar. Regardless of the representation’s level of abstraction, the avatar becomes closely allied with the player’s body because it responds to the actions of the player’s offscreen body. Avatars can range

from a virtual first-person perspective camera negotiating 3D space, to a fully modeled and animated third-person player character, to an abstract 2D image or “sprite.” Embodiment in video games comes about through the combination of control, identification, and bodily engagement on the other side of the screen. As game scholar Brendan Keogh argues, video game embodiment “account[s] not only for how the player instantiates videogame play but also for how the player is incorporated into, becomes part of, and is ultimately made by the system of videogame play they instantiate.”<sup>21</sup> Keogh goes on to discuss this as a normalizing process, noting the ways that video games produce certain bodies as exceptions to their norms of engagement.

In *Anatomy*, developer Kitty Horrorshow uses glitch aesthetics to disrupt normative logics of videogame embodiment. Before players see the domestic interior of *Anatomy*, they hear an audio effect that recalls the hollow plastic flip of a VHS tape inserted into a video cassette recorder, the cassette clunking and whirring as it interfaces with the machine’s spools. The timestamp in the upper right-hand corner of the screen as well as these sonic cues place the player in the nostalgic past of the not-yet-digital home camcorders of the early 1990s. This framing device, repeated at the start of each of the game’s three acts, locates the player out of time. Furthermore, though the player may be experiencing the game for the very first time, the lines of noise imply that not only is the player experiencing the game in the first person, but that the player is also watching, and has watched, this recording of themselves navigating the same rooms of the same house that will inevitably trap and consume them. The glitch aesthetic indexes this temporal confusion and frames the unfolding narrative of gameplay as simultaneously in the present and of the past. Rather than the standard embodied first-person camera common to the genre of the 3D first-person adventure game, Horrorshow’s glitches begin to exceed that model.

This glitchy first-person perspective in *Anatomy* is a medium-specific evocation of dissociation. Dissociation is often described as the sensation that one is watching their life “as though it were a movie,” something that *Anatomy*’s framing device cleverly literalizes. Dissociation is a common trauma response, but is not included in the DSM-5’s criteria for gender dysphoria.<sup>22</sup> However, trans studies scholar Hil Malatino describes dissociation as a form of withdrawal in response to scrutiny, misrecognition, and phobic violence that accompany public presence for trans people.<sup>23</sup> In line with this work, many scholars have discussed dissociation as both part of trans life and trans artistic production—both a real and crucial survival strategy and a recurring theme in art created by transgender people about transgender experience. For example, Cameron Awkward-Rich discusses how transgender artist Dylan Scholinski utilizes the out-of-body aerial perspective in a series of drawings titled *Home Sweet Home*, which take the survival mechanism of dissociation and institute it as a formal quality of the work.<sup>24</sup> Similarly, Atalia Israeli-Nevo theorizes dissociation as a byproduct of the temporalities of transition, as illustrated by Imogen Binnie’s novel *Nevada* and web series *Murder in Passing* by John Greyson.<sup>25</sup> This critical work points to both the cultural conditions that create a pervasive need to cultivate dissociative states as a survival skill for transgender people, as well as the prevalence of transgender artists using dissociation as fuel for their creative work.

Though *Anatomy* is not explicitly about medical or social gender transition, I suggest its dissociative first-person camera is a useful example of trans embodiment in videogames. In her study of trans temporalities in contemporary film and literature, Atalia Israeli-Nevo elaborates:

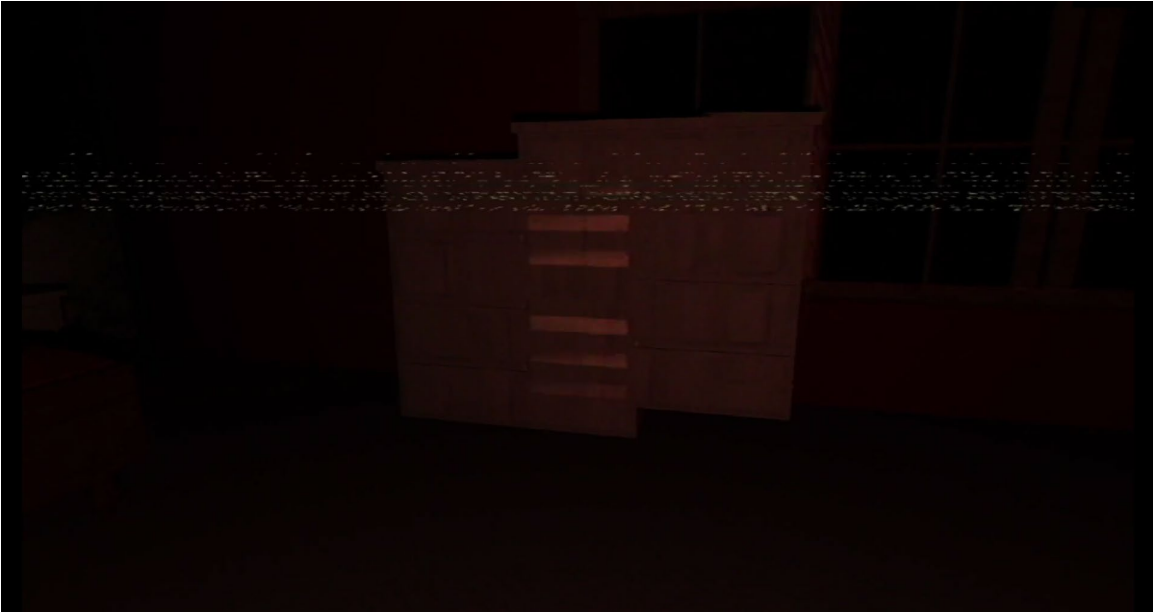
as trans subjects in this transphobic world, we are encouraged and forced into a position of not being present. We are dissociated from our bodies, our loved ones, and our general

environment. This dissociation throws us into a far future in which we are safe after we have passed and found a bodily and social home. However, this future is imagined and unreachable, resulting in us being out of time.<sup>26</sup>

Following Israeli-Nevo's description of the temporality of dissociation, the glitchy noise on the first person camera shuttles players between the tense present moment of play in which they are trying to endure being trapped in a house that is a body but not a home, and this other imagined future in which the player is safe, merely watching this experience, but still in some sense captive to the trauma even if it is consigned to the past.

In addition to offering players this glitched camera perspective, *Anatomy*'s environment expands the visual metaphor, creating a psychogeography of dissociation. Challenging the line players might be tempted to draw between the body that is the first-person camera and the body that is the house, in the second and third acts of *Anatomy* various objects within the house appear to flicker in and out of existence. A player that enters the first-floor bathroom in the second or third act will find a medicine cabinet that appears to blink in and out of existence. This effect is achieved by the addition of a custom script that turns on and off the "mesh renderer" at random intervals.<sup>27</sup> The "mesh renderer" is an attribute of a game object in the Unity video game engine that contains the visual information for the object. What looks like objects "glitching out," not working correctly, or disappearing is actually a custom-made script that exploits the fact that a game object can (mathematically) persist in 3D simulated space, even when it ceases to be visible to the player. Just as the wipe of lines of static across the screen draw attention back to the present-but-absent first-person perspective, these flickering objects have a similar absent presence, facilitated by this glitch effect script.

In other cases, a flickering effect is achieved by Horrorshow's strategic use of "z-fighting." Z-fighting, a phenomenon in computer graphics that is also commonly called "stitching," is usually attributable to the imprecision of a game engine's depth buffer. All 3D game objects have a location along the x, y and z-axes; in Unity, the z-axis describes the objects depth in 3D space. When two objects overlap along the z-axis, the Unity engine attempts to render both at the same location, which lends to the two planes "fighting" each other for visibility.<sup>28</sup> As the two objects "fight" each other, they appear banded and flickering. In the third act of *Anatomy*, this glitch effect is particularly visible in the master bedroom, where the walls and super-imposed bedroom furniture shimmer and flicker as the player navigates the first-person camera through the space (Figure 3).



***Figure 3. The banded, lighter area where the two bureaus intersect is an example of “z-fighting” in Anatomy (Kitty Horrorshow, 2016). This glitch effect appears as a shimmering or flickering surface and is evident throughout the master bedroom in the third act. Screenshot by author.***

Where the first-person camera and flickering environments of *Anatomy* speak to dissociation, I see Horrorshow’s use of “z-fighting” as a computational metaphor for one of trans embodiment’s other negative feelings, dysphoria. Dysphoria is often central in medicalized definitions of transgender identities. Gender dysphoria is an experience of the gap between one’s experience of gender and one’s body or how that body is interpellated by society. As the cassette tape lectures remind players, the house is also a kind of body, and these glitches manifest as a very particular kind of discomfort. In email correspondence, Horrorshow clarified that she wanted to make it look like “the [house] is tearing at its own skin, uncomfortable in its own existence, trying to be two things at once and failing both.”<sup>29</sup> The glitch in this case only happens at the intersections of two objects where the engine, in a very literal sense, is trying to render two things simultaneously and failing to render them in ways that meet normative expectations of solid-looking, stable objects. Instead, the objects are rendered with the “very fast, erratic, jagged effect of their faces kind of colliding together and sawing through each other non-stop.”<sup>30</sup> The glitch is a visualization of this dysphoric gap.

## **GLITCH GAME DESIGN AND HOW THE BODY CHANGES THE GAME**

Glitch aesthetic refers primarily to visual and sonic remediations of signal noise and error. When glitch functions as a design principle, it appears as formal experimental choices that subvert conventions of game design. As Patrick Jagoda writes, “most games condition players to expect instant feedback, frequent rewards, and (with sufficient practice) the possibility of mastery. This idea privileges a normative range of mechanics, challenges, and affects [...]”<sup>31</sup> When glitch appears as a game design principle, the game might be designed not to give players clear feedback, to



confuse the relationship between player inputs and software outputs, fail to provide any sense of reward for moving through the game, or might make the game's end goal unclear, so as to frustrate a player's sense of progress or mastery.

As I describe in the introduction, *Strawberry Cubes*, a 2D puzzle-platformer by Loren Schmidt, invites players to experiment with different keyboard inputs, many of which have an uninterpretable impact on the game state. Some inputs prompt a "rule mutated" notification to appear on screen, suggesting or promising that the player's input has caused some deeper change to take place, though the nature or consequence of such changes are not clearly telegraphed to the player. The revelation that input does not always correlate to control over the game system goes against game design conventions that reinforce a one-to-one cause-and-effect relationship between player input and game output. In their design blog, Schmidt describes this as designing for "bugs:"

i [sic] am working in a way which is deliberately bug-prone, and have incorporated many of these bugs into the game as features [...] this has led to a game which is much truer to itself than would otherwise be possible; which is self-consistent but which challenges conventional wisdom about how games should look or work.<sup>32</sup>

What Schmidt, as the developer, experiences as a "bug" is a glitch for players: these glitches are the moments of uncertainty, error, surprise, or disorientation that result from a design that runs counter to expectation. For Schmidt, glitch game design makes the game "much truer to itself than would otherwise be possible," because it enables a form of self-knowledge and self-making that engenders gameplay outside of the violence of conventionality.

Schmidt's design process also describes how glitches are a process or situation, not just visible manifestations of error or noise. Instead, what emerges from her discussion of her design process theorizes the glitch as fundamentally sociotechnical, never just about noise or error in a system, but rather the context in which that information is received and the positionality of the receiver.<sup>33</sup> As glitch artist and theorist Rosa Menkman writes, "failure is a phenomenon to overcome, while a glitch is incorporated further into technological or interpretive processes."<sup>34</sup> The glitch's power to surprise, discomfort, baffle, obstruct, or awe comes in part from the user's context: the expectations, prior experiences, and technical knowledge they bring to their encounter with the system in question. Whit Pow describes this process as "unmediation" because the glitch "makes the user aware of the construction of the computer system, and the user's own interpellation (or lack of interpellation) within these systems."<sup>35</sup> A glitch is then different from the kinds of failure we come to expect as part of video game play; the glitch is a situation that highlights how a system and its user are embedded within larger social structures and societal norms.<sup>36</sup>

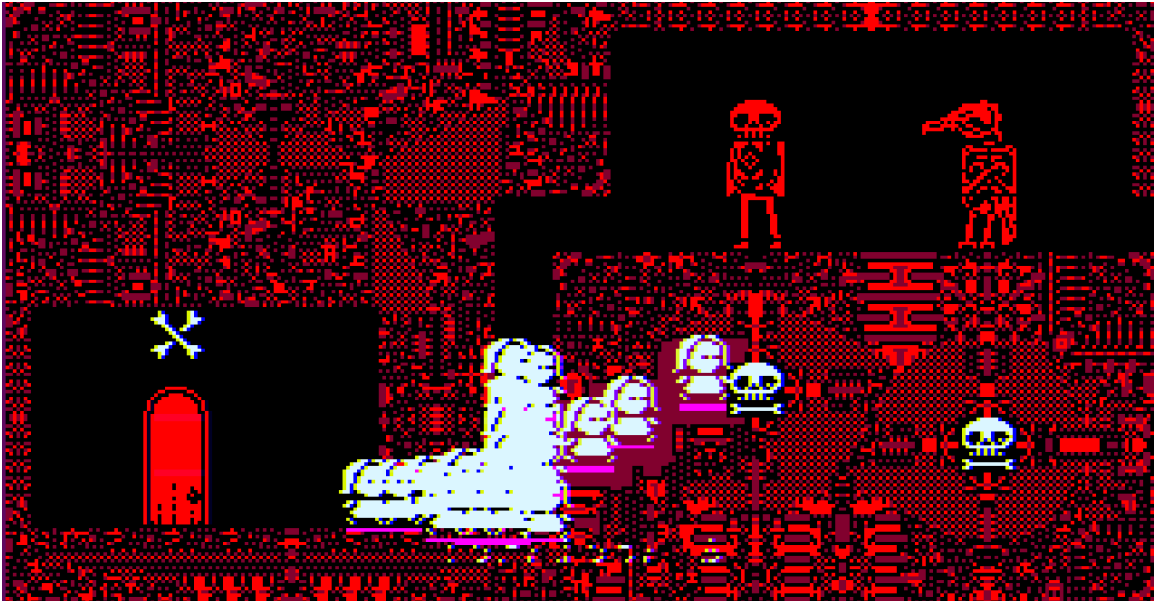
The capacity for glitch to critique existing norms and systems is part of its power as a representational mode for transgender life. For example, Liz Ryerson's *Problem Attic* uses glitch game design in a way that critiques gender normativity. The first level of the game is graphically minimal; three grayscale blocks line the bottom in a row, striped platforms cross the "room" in a diagonal leading to the upper righthand corner where there is a red and yellow patterned block (Figure 4). There is a brief tutorial written in pixelated letters: "'R' TO RESTART." Players eventually learn they must touch the red and yellow block if they want to progress in the game, though this goal is not made explicit. A black and gray cross descends from the upper right corner towards the player character, a minimalist stick figure. Should the player encounter the cross, the

screen shakes and a harsh buzzing sound effect plays. The glitch does not manifest as a visual style in this level, but rather as a design principle that favors semantic uncertainty and inconsistency. A player with prior experience playing 2D platformers might assume that all the horizontal platforms will be “solid” or can be jumped on. This is not the case. A player that attempts to jump on the white and gray platforms at the bottom will find they are not “solid” in the same way the black and striped ones are. This information can only be gleaned through gameplay—by experimentally falling through, instead of landing on, the platforms, or by noticing that the cross flies through these platforms, while flying around others.<sup>37</sup> This lack of semantic clarity around which platforms behave like platforms is central to the puzzle elements of this game. This uncertainty is exacerbated by the fact that the game is structured cyclically—each act revisits levels from prior acts with significant rule permutations. This ensures that any familiarity or proficiency players accrue while playing will give way to disorientation and frustration, necessitating another cycle of trial-and-error experimentation. Patrick Jagoda describes this process as “the problematic signaled by consenting to parts of a system that guarantee a deeper coercion.”<sup>38</sup> Though Ryerson’s game is relatively abstract and includes little narrative content, at various moments in the game Ryerson invokes gender, asking players to collect shapes that increase “M” or “F” counters in some levels, and including platforms in the shape of female and male gender symbols. Glitch game design in the form of this persistent semantic uncertainty is a procedural metaphor for a coercive system, one of which is binary conceptions of gender, forcing the player to constantly renegotiate how they navigate the world in response to arbitrary (gender) rules.



***Figure 4.*** *In the first level of Problem Attic (2013, Liz Ryerson), it is unclear which of these platforms can be jumped on. Screenshot by author.*

In *Strawberry Cubes*, developer Loren Schmidt uses glitch game design in a way that highlights the body as that which changes the whole game. As players experiment, they might find a key input that duplicates the player character. These duplicates can spawn inside platforms and walls—areas previously unnavigable by the single-bodied player character (Figure 5). The newfound ability to spawn inside of walls is surprising and feels erroneous. This is because players familiar with the procedural genre and grammars of the puzzle-platformer will anticipate that the primary challenge of the game will arise from the layout of the environment, comprised primarily of platforms that players jump on top of and enemies that are to be avoided or killed. In this case, the ability to spawn inside of platforms subverts this generic expectation: navigating the game from inside of these platforms feels like a glitch the player can exploit.



***Figure 5. Multiple instances of the player character spawn, some of them inside of previously unnavigable walls in Strawberry Cubes (Loren Schmidt, 2015). Screenshot by author.***

Essentially, this ability makes the platforming and puzzle challenges of the game irrelevant. No longer limited to traversing levels by jumping on top of platforms, players can easily reach collectible sigils that, prior to the capacity to glitch the player character body, are inaccessible due to their location inside platforms and walls. The ability to duplicate the player avatar effectively alters the game’s procedural genre, shifting gameplay away from the grammar of the puzzle-platformer to that of freeform sandbox exploration game. The now-multiple body of the player is the glitch in this system.

The theories and frameworks of trans studies help unpack the significance of the glitched body in *Strawberry Cubes*. Trans studies scholars outline the connection between cisnormativity, the mediation of body, and embodied experience. For example, in *Black Trans Feminism*, Marquis Bey argues that “race and gender shape how we experience (what we come to understand as) our bodies” but the “matter and materiality” of the body “are not to be equated with mere being, a transparent and unmediated facticity.”<sup>39</sup> Bey’s deconstructive argument highlights the contingent materialization of such categories (like race and gender) onto the body. Bey continues, “regulatory

norms create the obviousness of the “fact” of such a body as black or transgender or woman through a forcible, which is to say coerced, reiteration of tenets of what is said to be possible for one to be.”<sup>40</sup> To follow the trajectory of Bey’s argument, videogames have regulatory norms which coalesce into a set of bodily expectations or legibilities. In this case, *Strawberry Cubes*, by engaging with the genre of the puzzle-platformers, sets players up to anticipate precise, one-to-one control over a single character avatar who jumps on top of platforms to avoid enemies or other environmental obstacles. Instead, players are met with a body that challenges these expectations and has abilities that, though against the norm, welcome new and emergent play strategies. For example, if the player is attached to the arbitrary goal of collecting sigils, they will find the multiple-body glitch helpful in achieving that goal. For other players, the ability to be multiply-bodied allows them to transcend the challenge of the puzzle-platformer and opt into a different kind of game entirely.<sup>41</sup> In this sense *Strawberry Cubes* challenges the transparency of the body and makes a case for the strategic proliferation of bodies and selves, such that the non-unitary body is both advantageous and desirable, affording the player access to a different register of play.

The body made multiple also plays a role in *Problem Attic*’s glitch game design. As I have already mentioned, most of *Problem Attic*’s levels require the player to navigate to and touch a particular platform in order to progress to the next level. As I described in the first level of the game, players must negotiate their assumptions and expectations about how the world should work (all horizontal platforms should be “solid” and can be jumped on) in order to reach their goal. In the exceedingly difficult final level of the third act, players are presented with a different kind of puzzle entirely.<sup>42</sup> The game is no longer about navigating an environment that presents obstacles on the way to a special “goal” platform. Instead, it requires players to search out and reunite with a representation the player is likely unaware they are controlling. As Ian Bryce Jones describes,

at first, it will seem as if you’ve transformed into a white version of yourself, similar to the version that you navigated the Act II overworld with. This is not quite the case, however. You’ve actually turned into two versions of yourself. You have multiplied. The screen is only following one version of you. The other is replicating your movements, but in a completely different part of the map. You need to find it, [sic] and touch it to re-join it.<sup>43</sup>

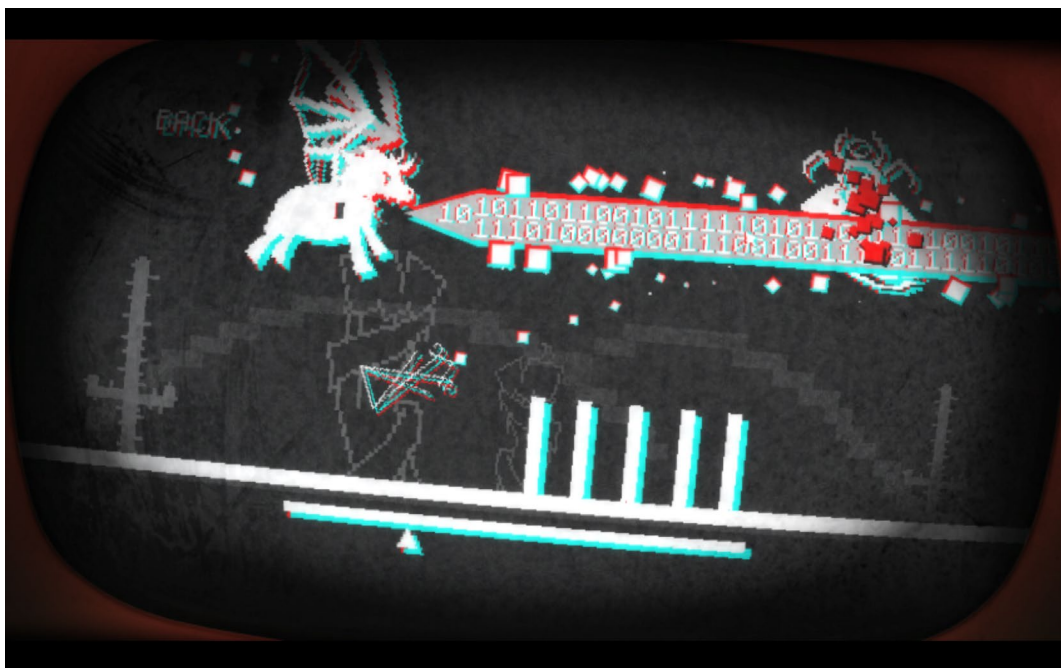
Without the aid of a walkthrough, the level feels broken because the game does not telegraph that the goal has changed, that there is a copy of the player character roaming around, refusing to provide explanation of why the platforms do not work the way they usually do.<sup>44</sup> Just as the glitched body in *Strawberry Cubes* transforms the game from a puzzle-platformer to an exploration game, Ryerson’s glitch design not only manifests through the reversal of expectations around player character representations in the duplication of selves, it also changes the nature of the game mechanics at hand.

In this level, *Problem Attic* dramatizes the unification of these two representations of the player character as progress towards acceptance of past violence, trauma, and pain. The level includes text as part of the environmental design that reads “I don’t know who I am,” a statement that narrates the game-based task of needing to search out and “find oneself” trapped somewhere in the level’s environment. It is only after this unification that the game narrates acceptance; text in the environment reads “You’ve hurt me tremendously but that is okay.”<sup>45</sup> Recalling the way that the game forces players to encounter arbitrarily changing rules, I understand these end levels to be about finding oneself despite these coercive systems. The glitch is the particularity of the uncertainty, difficulty, and pain one might experience while in search of self, but it also indexes

the violence of the coercive regulatory norms that make that search so challenging. Ultimately the game seems to cast the glitched body in a positive light, posing this reunion as an acceptance of disparate parts as central to the act of winning, even if that act is always marked by the difficulty one had to endure along the way.

## GLITCH AND GENDER IN *PONY ISLAND*

Now that I have outlined the use of and meaning of glitch aesthetics and glitch game design in games by transgender, nonbinary, and genderqueer developers, I want to consider a case where the glitch still speaks to gender normativity in a cisgender context. Daniel Mullins' *Pony Island* is an independently published video game released in 2016 that uses the glitch as an aesthetic and design principle much like the other games I have surveyed. *Pony Island* is a metafictional game about the pressures of independent video game development and the anxieties of creation as well as a psychological horror about becoming trapped inside a video game cabinet (with Satan, of course). In so far as the game is autobiographical, and perhaps "about" Mullins' own creative anxieties, the game is not overtly about Mullins' gender identity. Yet, I think it is still an instructive case that allows us to see how understanding the glitch as a trans representational mode can shed light on how the game navigates questions of gender.



**Figure 6. Fighting Baphomet with binary code and chromatic aberration in *Pony Island* (2016, Daniel Mullins). Screenshot by Michael Boehm.**

Throughout *Pony Island*, the player must navigate repetitive "bullet hell" levels that primarily consist of navigating the eponymous pony over hurdles, avoiding and then destroying satanic presences.<sup>46</sup> In these games, the pony has one method of attack: a projectile vomit of binary code, pixelation, and chromatic aberration (Figure 6). This glitchy looking weapon recalls the narrative conceit (which is, cleverly, also a set of logic puzzles and game-within-the-game) in which players

must resolve errors in program files to gain upgrades to their ponies, and, ultimately free trapped souls condemned by Satan by locating and deleting core program files.

This bleak, technical, and repetitive pony-jumping game is transformed at the game's midpoint into something parodically soft. The pony is now a pastel pink unicorn, the glitch-vomit attack is called a "gust of air," and is used to keep butterflies (formerly satanic monsters) from "tickling" (attacking) the pony (Figure 7).<sup>47</sup> The first version of the game plays with hardcore games' machismo, using the same satanic tropes popularized by shooter games like *Doom* (id Software, 1996). The pastel version of the jumping game draws on the visual language of casual games, which are often feminized.<sup>48</sup> The transformation is a parody in the sense that the pastel and pastoral version of the game is actually more technically difficult to navigate than its bleak predecessor, requiring more precision to complete by asking players to differentiate between "glitched" butterflies (which cannot be "blown away") and regular ones.



**Figure 7. Tickling butterflies with gusts of wind in Pony Island (2016, Daniel Mullins). Screenshot by Michael Boehm.**

Once the pastel version is established and players have completed it, subsequent levels of this minigame "glitch out." Recalling the glitch aesthetics of *Anatomy*, the pastel environment becomes inconstant. The trees in the parallaxing background go from lush and brightly cartoonish to bare, reverting to the black, white, and red/blue chromatic aberration of the prior version of the game. Background elements appear upside down and others flicker on and off (Figure 8). The glitch modulates this pony jumping game between two highly gendered presentations of what is, ultimately, the same gameplay mechanics.





***Figure 8. Glitch aesthetics modulate gendered play in Pony Island (2016, Daniel Mullins). In the foreground, the player character pony has mis-matched wings, and the trees in the background flicker and flip upside down. Screenshot by Michael Boehm.***

To read the glitch as a trans representational mode in this context is to see the ways the glitch works to question or undo player expectations around gendered play. I also suggest that Mullins might be appropriating a visual language and set of design principles germane to this particular subset of trans and genderqueer artists and avant-garde game designers. However, ultimately, the pastel version of the game falls away, and with it, so too does *Pony Island's* gender trouble. The game does not dwell in the indeterminacy of the glitch: instead it reconciles it, returning players to the aesthetic world of the game's first version for the final levels of the game. The glitch is folded back into larger action of the plot and produces action in the game at a different scale. The glitch in Mullins' game is always a problem players can solve or move past rather than something players are always in active and unavoidable negotiation with, as it is in *Anatomy* and *Problem Attic*, or available as a tactic to radically change the game as it is in *Strawberry Cubes*.

## CONCLUSION

The existence of glitch art, and glitch video games also suggest that the glitch is a desired state, one necessary for self-expression, creativity, and, perhaps most vitally, continued survival. Whit Pow argues that the glitch is a methodological orientation to transgender media history. They discuss what it means to write "a trans media history when mediation itself has such a violent history in relationship to trans people and the histories we are told through," evoking the many ways in which trans life is subject to violent capture in the archive as well as the ways that trans life evades capture, rendering it invisible.<sup>49</sup> To expand upon this, I understand the glitch to be an operation that allows creators to reflect on the kinds of difficult or negative emotions of transgender life (including dissociation and dysphoria) that videogames often struggle to communicate. As a not-primarily-

visual game design strategy, the glitch also speaks to the forms of opacity and evasion necessary for trans survival in a transphobic world.

In an extension of Whit Pow's claim that the glitch is part of trans media history, I contextualize these games in a longer history of glitch art made by transgender artists using video game technologies. Unlike their predecessor, these games remediate elements of signal noise or error aesthetically, or take the glitch as a scenario, one in which the player is caught off-guard by a system that feels erroneous or arbitrary. Despite these differences, these games point to a larger historical continuity that spans nearly a half-century. To understand the glitch as a representational mode for trans life is also to account for the ways that the glitch critiques systems of power which include cultural scripts around how technology should be used (being able to switch game cartridges while the Bally Astrocade was still powered on, or the idea that "z-fighting" is a glitch because two solid objects cannot exist at the same point in space) or how games should be designed (such that there should be a clear relationship between player input and system output, or that the goal of a level should be clear to a player).

Glitch is but one representational mode for trans experience among many possible others. micha cárdenas explores "shifting" as a poetics for trans of color experience in Mattie Brice's video game *Mainichi* and her own game *Redshift and Portalmetal*. In both games, player interaction consists of choosing between discrete menu options, where even banal-seeming decisions reflect larger the systems of violence that engender the need to be able to shift—to change "appearance, form, or location for safety and survival."<sup>50</sup> Likewise, Teddy Pozo has documented how game developers are using haptic design and soft interfaces made of textiles and conductive thread to make games about being transgender. Pozo counterposes this haptic design strategy to video games that have overt narrative representations of transgender people, noting that haptic design remains a "strategy for maintaining balance between closeness and distance" because it both allows creators physical control over their work and make visible their labor.<sup>51</sup> For Pozo, the haptic design strategy provides designers the opportunity to reach queer and transgender audiences while maintaining "productive distance from audiences who do not share the experiences being represented," avoiding the extractive paradigm of "empathy games."<sup>52</sup> Importantly, glitch affords transgender creators forms of distance and discretion that more overt narrations of transgender life do not.

Finally, I think it is important to note that the glitch is fundamentally sociotechnical and therefore transitory. Maybe it is possible to envision a desired future in which the glitch is not a salient or descriptive metaphor for trans experience, in which trans life (and perhaps also trans studies) does not have to articulate itself against systems of power that are orthogonal to its flourishing. The glitch as a primarily contextual phenomenon gives us permission to think about how the structures of power might change.

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## ENDNOTES

1. Reviewer Patrick Klepek corroborates my experience, writing “rooms seem to change on a whim, with no rhyme or reason behind them. I’d loop back to a room after a few minutes of exploration, only to realize objects had shifted, and there were new and unexpected holes in the wall. Hours later, I’m still not sure what caused it to change.” In their Patreon updates, Schmidt describes the game as a way to memorialize her grandmother’s struggle with Alzheimer’s disease, which offers some explanation for the disorienting and inconsistent landscapes of the game. Patrick Klepek, “A Creepy Game Where You Have No Idea What The Hell Is Going On,” Kotaku, July 24, 2015, <https://kotaku.com/a-creepy-game-where-you-have-no-idea-what-the-hell-is-1720036165>; Loren Schmidt, “Update April 2015,” *Loren Schmidt is creating video games + other digital art* (blog), Patreon, April 2015, <https://www.patreon.com/posts/update-april-2431787>.
2. Loren Schmidt, “Strawberry Cubes,” PC, Itch.io, July 2, 2015, <https://lorenschmidt.itch.io/strawberrycubes>.
3. merritt k and Naomi Clark, “Queering Human-Game Relations,” *First Person Scholar*, February 18, 2015, <http://www.firstpersonscholar.com/queering-human-game-relations/>.
4. Edmond Chang, “Queergaming,” in *Queer Game Studies*, ed. Bo Ruberg and Adrienne Shaw (Minneapolis, MN: University of Minnesota Press, 2017), 17.
5. Cael M. Keegan, “Against Queer Theory,” *TSQ: Transgender Studies Quarterly* 7, no. 3 (August 1, 2020): 349–53, <https://doi.org/10.1215/23289252-8552978>; Cael M. Keegan, “Getting Disciplined: What’s Trans\* About Queer Studies Now?,” *Journal of Homosexuality* 67, no. 3 (2020): 384–97, <https://doi.org/10.1080/00918369.2018.1530885>.
6. Keegan, “Against Queer Theory,” 351.
7. Bo Ruberg, “Trans Game Studies,” *JCMS: Journal of Cinema and Media Studies* 61, no. 2 (Winter 2022): 204.
8. micha cárdenas, *Poetic Operations: Trans of Color Art in Digital Media* (Durham, NC: Duke University Press, 2022), 13.
9. Adrienne Shaw’s collaborative *LGBTQ Game “Archive”* is one such cataloguing effort. This crowd-sourced archive includes fan theories in addition to textual and paratextual game content to track representations of lesbian, gay, bisexual and queer sexual identities, as well as transgender characters. Adrienne Shaw and Christopher J. Persaud, “Beyond Texts: Using Queer Readings to Document LGBTQ Game Content,” *First Monday*, July 24, 2020, <https://doi.org/10.5210/fm.v25i8.10439>; Adrienne Shaw, “Reclaiming Video Games’ Queer Past before It Disappears,” *The Conversation*, accessed December 9, 2018, <http://theconversation.com/reclaiming-video-games-queer-past-before-it-disappears-104045>.
10. The popularity of the phrase is often attributed to the 2014 *Time* magazine cover featuring Laverne Cox, however as Stryker offers more context, this period also includes the formal depathologization of transgender identities in the *DSM-V* in 2013, the election of transexual men as presidents of the World Professional Association for Transgender Health in 2007 and again in 2013, and the introduction of legally recognized nonbinary gender identities in some states in the

US. Susan Stryker, "The Tipping Point?," in *Transgender History: The Roots of Today's Revolution*, 2nd ed. (New York: Seal Press, 2017), 195–236.

11. There are many other glitch games made between 2010 and 2020 that could have been included in this study, but were not for the sake of length. See Tabitha Nikolai, "Liquid Dungeon Byproduct," Windows, December 9, 2020, <https://tabithanikolai.itch.io/liquid-dungeon-byproduct>; Anna Anthropy, "Redder," 2010, <https://w.itch.io/redder>; Abyssal Uncreations, "\_transfer," PC, 2017; Kitty Horrorshow, "000000FF0000," Windows, May 10, 2016, <https://kittyhorrorshow.itch.io/000000ff0000>.

12. Rosa Menkman, *The Glitch Moment(Um)*, Network Notebooks 04 (Amsterdam: Institute of Network Cultures, 2011), 28.

13. Whitney (Whit) Pow, "A Trans Historiography of Glitches and Errors," *Feminist Media Histories* 7, no. 1 (January 1, 2021): 197–230, <https://doi.org/10.1525/fmh.2021.7.1.197>.

14. JODI have also used other games, including *Max Payne*, *Jet Set Willy*, and *Street Legal*. For more on *untitled game*, see Lisa Adang and Michael Connor. Lisa Adang, "UNTITLED PROJECT: A CROSS-DISCIPLINARY INVESTIGATION OF JODI'S UNTITLED GAME," Rhizome Conservation Fellow, Rhizome Art Base (Rhizome, Summer 2013); Michael Connor, "Required Reading: A Closer Look at JODI's 'Untitled Game,'" Rhizome, October 16, 2013, <https://rhizome.org/editorial/2013/oct/16/required-reading-closer-look-jodis-untitled-game/>.

15. Games scholar Patrick LeMieux has contested the degree to which Arcangel's work is actually a ROM hack in his short documentary, *Everything But the Clouds*. However, there is no question that Arcangel's glitch art is reliant on videogame hardware and software, regardless of the status of this particular hack. Corey Arcangel, "Things I Made," Corey Arcangel, August 2, 2023, <https://coryarcangel.com/things-i-made/>; Patrick LeMieux, *Everything but the Clouds*, 2017, video, 19:44, November 8, 2017, <https://vimeo.com/241966869>.

16. Dick Ainsworth, Jamie Fenton, and Raul Zaritsky, *Digital TV Dinner*, 1978, video, 2:41, October 8, 2009, with description by Jamie Fenton, <https://www.youtube.com/watch?v=Ad9zdlaRvdM>.

17. Pow, "A Trans Historiography of Glitches and Errors," 201–2.

18. Keegan, "Getting Disciplined: What's Trans\* About Queer Studies Now?," 387.

19. Third-party asset packages are licensed content developers can put in their game. These packages can contain visual effects (like chromatic aberration or scan lines), 3D or 2D models, or environments as well as a license to reproduce those assets. Game engines like Unity or Unreal maintain platforms (called "asset stores") that allow third-party vendors to distribute and sell asset packages for use with these engines. Pre-fabricated assets can help developers minimize time sunk into highly specialized programming tasks (like writing custom shader scripts) or can minimize the number of custom 3D models, environments, or other artistic tasks necessary to realize the game.

20. For example, in the first act of the game, the narrator explains, "the living room is very much the heart of the house. While a human heart circulates blood, to oxygenate the body's extremities, the living room circulates people." Kitty Horrorshow, "Anatomy," PC, October 31, 2017, <https://kittyhorrorshow.itch.io/anatomy>.

21. Brendan Keogh, *A Play of Bodies: How We Perceive Videogames* (MIT Press, 2018), 22.

22. Jack Turban, "What Is Gender Dysphoria?," American Psychiatric Association, August 2022, <https://www.psychiatry.org/443/patients-families/gender-dysphoria/what-is-gender-dysphoria>.

23. Hil Malatino, *Side Effects: On Being Trans and Feeling Bad* (Minneapolis; London: University of Minnesota Press, 2022), 35.

24. Cameron Awkward-Rich, *The Terrible We: Thinking with Trans Maladjustment*, Asterisk: Gender, Trans-, and All That Comes After (Durham, NC: Duke University Press, 2022), 65.
25. Atalia Israeli-Nevo, "Taking (My) Time: Temporality in Transition, Queer Delays and Being (in the) Present," *Somatechnics* 7, no. 1 (March 2017): 34–49, <https://doi.org/10.3366/soma.2017.0204>.
26. Israeli-Nevo, 38.
27. Kitty Horrorshow, email to author, March 12, 2022.
28. This can also happen in cases where the imprecision of the z-buffer causes objects that are numerically on separate planes to be "rounded up" to being on the same plane. "How To Fix Unity Z-Fighting With Multiple Solutions," *Unity3d Tips* (blog), October 4, 2017, <https://www.unity3dtips.com/unity-z-fighting-solutions/>.
29. Horrorshow, email to author, March 12, 2022.
30. Horrorshow, email to author, March 12, 2022.
31. Patrick Jagoda, *Experimental Games: Critique, Play, and Design in the Age of Gamification* (Chicago: University of Chicago Press, 2020), 159.
32. Schmidt, "Update April 2015."
33. My thinking is greatly inspired by Madison Schmalzer's work on "janky controls," where she frames similar feelings of dishabituation in gaming in relational terms. In particular, her theorization of "jank" makes the body of the player a central vector of meaning-making in games, arguing that jank can be read into games by virtue of a player's lack of experience and physical (in)capacities. I think the glitch is doing similar work, but on the other side of the screen. M. D. Schmalzer, "Janky Controls and Embodied Play: Disrupting the Cybernetic Gameplay Circuit," *Game Studies* 20, no. 3 (September 2020), <http://gamestudies.org/2003/articles/schmalzer>.
34. Menkman, *The Glitch Moment(Um)*, 27.
35. Pow, "A Trans Historiography of Glitches and Errors," 203.
36. For more context on the ways that video games integrate failure as a pleasurable experience, see Jesper Juul's *The Art of Failure*. In "Playing to Lose," Bo Ruberg responds to Juul's provocations about the pleasurable aspects of failing to play video games, pointing to the possibility of intentionally playing to fail, particularly in ways that are not recognized by the game or otherwise folded back into forms of progression or accomplishment rewarded in gameplay. An example of such queer failure could be something like refusing to drive a car in Rockstar's car-centric series, *Grand Theft Auto*, an act that inhibits progression through the game's narrative and missions. With the exception of *Pony Island*, the games I discuss in this article do not engage with failure in the ways that Juul discusses because they do not have explicit goals for players to overcome. While I think a case could be made for "queer" or resistant play practices in these games, gameplay is open enough that it would be more challenging to determine what constitutes failure in these games. Thus I would argue that glitch, rather than failure is a richer lens for analysis of these games because they require an analytic process in excess of game play, one that often emphasizes the situatedness of player, customs of game design, and the technical system. Jesper Juul, *The Art of Failure: An Essay on the Pain of Playing Video Games* (Cambridge, MA: MIT Press, 2013); Bo Ruberg, "Playing to Lose: Burnout and the Queer Art of Failing at Video Games," in *Gaming Representation: Race, Gender, and Sexuality in Video Games*, Digital Game Studies (Bloomington, Indiana: Indiana University Press, 2017), 197–211.

37. For more on games as experiments see Jagoda, *Experimental Games: Critique, Play, and Design in the Age of Gamification*.
38. Jagoda, 181.
39. Marquis Bey, *Black Trans Feminism*, Black Outdoors: Innovations in the Poetics of Study (Durham, NC; London: Duke University Press, 2022), 8.
40. Bey, 8.
41. I'm thinking alongside Bo Ruberg's argument that trans game studies should build from "scholarship in which the "trans" in transgender is understood as a force of disruption and creation." Ruberg, "Trans Game Studies," 205.
42. Of all the games surveyed in this article, *Problem Attic* was the only one I could not complete. My understanding of this game is indebted to the documentation Ian Bryce Jones has created on his personal blog and YouTube channel. Ian Bryce Jones, "A Practical Guide to Problem Attic," *Intermittent Mechanism* (blog), April 9, 2017, <https://intermittentmechanism.blog/2017/04/09/a-practical-guide-to-problem-attic/>.
43. Ian Bryce Jones, "Problem Attic Video Walkthrough Pt 20 - Endgame 1," 2017, video, 3:26, <https://www.youtube.com/watch?v=7kw4zwekmcU>.
44. Patrick Jagoda describes this glitchiness as the game's "radical negativity," interpreting the game's constantly shifting rules and expectations as a form of coercion, one that challenges neoliberal accounts of consent and control. Jagoda ultimately links this back to Ryerson's subject position, writing that "though the game is not explicitly autobiographical, Ryerson's identity as a trans woman influences the ways that the experience communicates the problematic of consent via the specificity of a marginalized position." Jagoda, *Experimental Games: Critique, Play, and Design in the Age of Gamification*, 180.
45. Liz Ryerson, "Problem Attic," Itch.io, 2013, <https://lizryerson.itch.io/problem-attic>.
46. "Bullet hell" is the English term for a video game subgenre that originated in the mid-1990s Japanese arcade scene. This subgenre of shooters is also referred to as "manic shooters" or "twitch shooters" in English. These shooting games are usually, but not exclusively, 2D and top down, and require players to dodge many bullets while also shooting the enemies that generate them. In puzzle-platformers the platforms and environmental design are central to the difficulty and challenge of the game, whereas the moving patterns of bullets in bullet hell games constitute the main difficulty and challenge for players. Bullets visually overwhelm the screen and require the player to develop a navigational pattern to avoid the bullets. *Pony Island* deviates from the top-down perspective common to bullet hell games, but I think the level design alludes to this sub-genre and its connotations as "hard core" and requiring extensive training and skill. For more on the genre, key games in its development, and information on its developers and communities of play see Brian Ashcraft and Jean Snow, "Shooting Games," in *Arcade Mania: The Turbo-Charged World of Japan's Game Centers* (Tokyo, Japan: Kodansha International, 2008), 66–88.
47. Daniel Mullins, *Pony Island*, 2016.
48. Shira Chess, *Ready Player Two: Women Gamers and Designed Identity* (Minneapolis, MN: University of Minnesota Press, 2017), 48.
49. Pow, "A Trans Historiography of Glitches and Errors," 203.
50. cárdenas, *Poetic Operations: Trans of Color Art in Digital Media*, 97.
51. Teddy Pozo, "Queer Games After Empathy: Feminism and Haptic Game Design Aesthetics from Consent to Cuteness to the Radically Soft," *Game Studies* 18, no. 3 (December 2018), [http://gamestudies.org/1803/articles/pozo?fbclid=IwAR0s\\_QFzN6Jz\\_7unnQEvjAOAd0tOKz\\_O5PmBg1l5T6yHo4hSeEnwxYJZm5g](http://gamestudies.org/1803/articles/pozo?fbclid=IwAR0s_QFzN6Jz_7unnQEvjAOAd0tOKz_O5PmBg1l5T6yHo4hSeEnwxYJZm5g).

## REFERENCES

- Abyssal Uncreations. *\_transfer\_*. PC. Itch.io. 2017. <https://abyssaluncreations.itch.io/-transfer>.
- Adang, Lisa. "UNTITLED PROJECT: A CROSS-DISCIPLINARY INVESTIGATION OF JODI'S UNTITLED GAME." Rhizome Conservation Fellow. Rhizome Art Base. Rhizome, Summer 2013.
- Ainsworth, Dick, Jamie Fenton, and Raul Zaritsky, *Digital TV Dinner*, 1978, video, 2:41, October 8, 2009. <https://www.youtube.com/watch?v=Ad9zdlaRvdM>.
- Anthropy, Anna. *Redder*. PC. Itch.io. 2010. <https://w.itch.io/redder>.
- Arcangel, Corey. "Things I Made." Corey Arcangel, August 2, 2023. <https://coryarcangel.com/things-i-made/>.
- Ashcraft, Brian, and Jean Snow. "Shooting Games." In *Arcade Mania: The Turbo-Charged World of Japan's Game Centers*, 66–88. Tokyo, Japan: Kodansha International, 2008.
- Awkward-Rich, Cameron. *The Terrible We: Thinking with Trans Maladjustment*. Asterisk: Gender, Trans-, and All That Comes After. Durham, NC. Duke University Press, 2022.
- Bey, Marquis. *Black Trans Feminism*. Black Outdoors: Innovations in the Poetics of Study. Durham, NC. Duke University Press, 2022.
- cárdenas, micha. *Poetic Operations: Trans of Color Art in Digital Media*. Asterisk: Gender, Trans-, and All That Comes After. Durham, NC. Duke University Press, 2022.
- Chang, Edmond. "Queergaming." In *Queer Game Studies*, edited by Bo Ruberg and Adrienne Shaw, 15–23. Minneapolis, MN: University of Minnesota Press, 2017.
- Chess, Shira. *Ready Player Two: Women Gamers and Designed Identity*. Minneapolis, MN: University of Minnesota Press, 2017.
- Connor, Michael. "Required Reading: A Closer Look at JODI's 'Untitled Game.'" Rhizome, October 16, 2013. <https://rhizome.org/editorial/2013/oct/16/required-reading-closer-look-jodis-untitled-game/>.
- Horrorshow, Kitty. *Anatomy*. PC. Itch.io. October 31, 2017. <https://kittyhorrorshow.itch.io/anatomy>.
- . "000000FF0000." Windows. Itch.io., May 10, 2016. <https://kittyhorrorshow.itch.io/000000ff0000>.
- Israeli-Nevo, Atalia. "Taking (My) Time: Temporality in Transition, Queer Delays and Being (in the) Present." *Somatechnics* 7, no. 1 (March 2017): 34–49. <https://doi.org/10.3366/soma.2017.0204>.
- Jagoda, Patrick. *Experimental Games: Critique, Play, and Design in the Age of Gamification*. Chicago, IL: University of Chicago Press, 2020.
- Jones, Ian Bryce. "A Practical Guide to Problem Attic." *Intermittent Mechanism* (blog), April 9, 2017. <https://intermittentmechanism.blog/2017/04/09/a-practical-guide-to-problem-attic/>.
- . *Problem Attic Video Walkthrough Pt 20 - Endgame 1*, 2017, video, 3:26. <https://www.youtube.com/watch?v=7kw4zwekmcU>.
- Juul, Jesper. *The Art of Failure: An Essay on the Pain of Playing Video Games*. Cambridge, MA: MIT Press, 2013.

- k, merriitt, and Naomi Clark. "Queering Human-Game Relations." *First Person Scholar*, February 18, 2015. <http://www.firstpersonscholar.com/queering-human-game-relations/>.
- Keegan, Cael M. "Against Queer Theory." *TSQ: Transgender Studies Quarterly* 7, no. 3 (August 1, 2020): 349–53. <https://doi.org/10.1215/23289252-8552978>.
- . "Getting Disciplined: What's Trans\* About Queer Studies Now?" *Journal of Homosexuality* 67, no. 3 (2020): 384–97. <https://doi.org/10.1080/00918369.2018.1530885>.
- Keogh, Brendan. *A Play of Bodies: How We Perceive Videogames*. Cambridge, MA: MIT Press, 2018.
- Klepek, Patrick. "A Creepy Game Where You Have No Idea What The Hell Is Going On." Kotaku, July 24, 2015. <https://kotaku.com/a-creepy-game-where-you-have-no-idea-what-the-hell-is-1720036165>.
- LeMieux, Patrick. *Everything but the Clouds*, 2017, video, 19:44, November 8, 2017. <https://vimeo.com/241966869>.
- Malatino, Hil. *Side Affects: On Being Trans and Feeling Bad*. Minneapolis, MN: University of Minnesota Press, 2022.
- Menkman, Rosa. *The Glitch Moment(Um)*. Network Notebooks 04. Amsterdam: Institute of Network Cultures, 2011.
- Mullins, Daniel. *Pony Island*. PC. 2016.
- Nikolai, Tabitha. "Liquid Dungeon Byproduct." Windows. Itch.io., December 9, 2020. <https://tabithanikolai.itch.io/liquid-dungeon-byproduct>.
- Pow, Whitney (Whit). "A Trans Historiography of Glitches and Errors." *Feminist Media Histories* 7, no. 1 (January 1, 2021): 197–230. <https://doi.org/10.1525/fmh.2021.7.1.197>.
- Pozo, Teddy. "Queer Games After Empathy: Feminism and Haptic Game Design Aesthetics from Consent to Cuteness to the Radically Soft." *Game Studies* 18, no. 3 (December 2018). [http://gamestudies.org/1803/articles/pozo?fbclid=IwAR0s\\_QFzN6Jz\\_7unnQEvjAOAd0tOKZ\\_O5PmBg1l5T6yHo4hSeEnwxYJZm5g](http://gamestudies.org/1803/articles/pozo?fbclid=IwAR0s_QFzN6Jz_7unnQEvjAOAd0tOKZ_O5PmBg1l5T6yHo4hSeEnwxYJZm5g).
- Ruberg, Bo. "Playing to Lose: Burnout and the Queer Art of Failing at Video Games." In *Gaming Representation: Race, Gender, and Sexuality in Video Games*, 197–211. Digital Game Studies. Bloomington, Indiana: Indiana University Press, 2017.
- . "Trans Game Studies." *JCMS: Journal of Cinema and Media Studies* 61, no. 2 (2022 Winter 2022): 200–205.
- Ryerson, Liz. *Problem Attic*. PC. Itch.io. 2013. <https://lizryerson.itch.io/problem-attic>.
- Schmalzer, M. D. "Janky Controls and Embodied Play: Disrupting the Cybernetic Gameplay Circuit." *Game Studies* 20, no. 3 (September 2020): 64–82. <http://gamestudies.org/2003/articles/schmalzer>.
- Schmidt, Loren. *Strawberry Cubes*. PC. Itch.io, July 2, 2015. <https://lorenschmidt.itch.io/strawberrycubes>.
- . "Update April 2015." Loren Schmidt is creating video games + other digital art (blog), April 2015. <https://www.patreon.com/posts/update-april-2431787>.
- Shaw, Adrienne. "Reclaiming Video Games' Queer Past before It Disappears." The Conversation. Accessed December 9, 2018. <http://theconversation.com/reclaiming-video-games-queer-past-before-it-disappears-104045>.
- Shaw, Adrienne, and Christopher J. Persaud. "Beyond Texts: Using Queer Readings to Document LGBTQ Game Content." *First Monday*, July 24, 2020. <https://doi.org/10.5210/fm.v25i8.10439>.

- Stryker, Susan. "The Tipping Point?" In *Transgender History: The Roots of Today's Revolution*, 2nd ed., 195–236. New York: Seal Press, 2017.
- Turban, Jack. "What Is Gender Dysphoria?" American Psychiatric Association, August 2022. <https://www.psychiatry.org/443/patients-families/gender-dysphoria/what-is-gender-dysphoria>.
- Unity3d Tips. "How To Fix Unity Z-Fighting With Multiple Solutions," October 4, 2017. <https://www.unity3dtips.com/unity-z-fighting-solutions/>.

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