IDM Research Paper:

The Use of Intentional Friction and Unintuitive Design in the Creation of Interesting Gaming Experiences

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Abstract

This paper aims to explore how intentional friction and unintuitive design elements can be utilized to create more memorable and engaging gaming experiences. The paper takes a qualitative, case study based approach, exploring 5 games from a diverse range of genres including Dark Souls, Getting Over It With Bennett Foddy, Octodad, Death Stranding and Old School Runescape. By thoroughly examining design elements present in these 5 games and analyzing them through frameworks like Isaac Sung's distinction between productive and unproductive friction while discussing psychological concepts like the effort paradox, the paper demonstrates how friction can be thoughtfully implemented to enhance the player experience of a game. The analysis also discusses the negatives associated with friction heavy design and delves into solutions for how these negatives can be mitigated such as community tools and integration and prioritizing player agency. Ultimately, the paper argues that intentional friction, when thoughtfully implemented, can be a great tool for game designers that want to create more impactful and longer lasting gaming experiences.

Contents

Introduction

As gaming has become more and more mainstream, games have been pushed into becoming more and more user-friendly to accommodate a larger and more varied audience. In the process of this, some scholars and designers have argued that mainstream design principles have lost something that made games special. This trend towards a more "lubricated" design has lead to modern triple a games feeling predictable and homogeneous. In other words, forgettable.

This user-friendly design manifests itself in many elements of a game such as, intuitive control schemes, smooth seamless progression and hand-holding players. While these elements are great for accessibility, they also drastically hinder player engagement by giving them easy and frictionless paths to cheap and underwhelming rewards.

There has however been a growing amount of research on the use of well placed friction. In game design, friction refers to adding mechanics and elements to deliberately slow the player down, introduce challenge, or create moments of confusion and reflection. What defines a game is extremely broad, as such there are many ways in which this friction can be integrated into a game's design. Unintuitive control schemes, obscure and confusing puzzles, and narrative structures that require digging deep into hidden pockets of a games world are just a few examples of this kind of friction. Utilizing these kind of techniques and structures thoughtfully can create gaming experiences which are far more engaging and memorable[1][2].[3]

There is a lot of research in the game design space focusing on user-friendly design, but more recent studies suggest that certain types of friction when used properly can lead to more mindful interactions and improved learning. This is where some scholars have created the concept of "productive friction" which is friction that introduces positives effects to a gaming experience. For example heightened engagement and reflection while mitigating "unproductive friction" would harm the game's accessibility.

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1. Anna L. Cox et al., "Design Frictions for Mindful Interactions: The Case for Microboundaries," in *Proceedings of the 2016 CHI Conference Extended Abstracts on Human Factors in Computing Systems* (ACM, 2016), 34, https://doi.org/10.1145/2851581.2892410, https://www.ucl.ac.uk/uclic/sites/uclic/files/design-frictions_chi2016lbw_v14.pdf.

2. Isaac Sung, "Productive and Unproductive Friction in Game Design" (PhD diss., University of Wisconsin, Madison, 2021), 34.

3. Interaction Design Foundation, *Positive Friction: How You Can Use It to Create Better Experiences*, Available at: https://www.interaction-design.org/literature/article/positive-friction-how-you-can-use-it-to-create-better-experiences, 2023, 34.

The term "interesting" is highly subjective, but for the purposes of this paper it refers to a game that is both engaging and memorable. Something that leaves an impact on the player in one way or another.

Classic games such as "System Shock 2"[4] relied much more on friction in their design[5].[6] The game didn't rely on modern gaming conveniences like fast travel and quest markers. As such players were forced to think hard about their actions and making progress was often a thought provoking challenge. By comparison, modern open world games provide the player with endless tools, hints, and clear objectives, creating a seamless progression curve that fast tracks the player from the start of the game to the end without ever engaging them on any deep level. The biggest culprit of this kind of design is the triple A games industry. Large franchises like "Assassin's Creed" churn out forgettable homogeneous experiences that never challenge the player in a meaningful way. An experience that is as accessible as it is forgettable.

The value of challenge is something that has been shown through research. Players will often find a reward more valuable when they have had to put effort in to achieve it. This is known as the "effort paradox".[7]

The goal of this paper is to analyze how intentional friction and unintuitive design can be implemented into games to contribute to player engagement and memorability, analyze how friction is utilized in different genres, and discuss how the negative side effects of friction heavy design can be mitigated. By drawing on recent academic frameworks and discussing detailed case studies, it will explore the principles behind productive design friction and will contrast them with mainstream trends to discuss their implications for modern game design and present possible future enhancements to tired design formulae.

Methodology and Motivation

The motivation to write this paper came from interviews I had seen with Bennett Foddy in which he discuss the idea of design friction and modern

4. *System Shock 2* [in en], 34, https://en.wikipedia.org/w/index.php?title=System_Shock_2&oldid=1288576069.

5. Jonathan Chey, *Postmortem: Irrational Games' System Shock 2 (1999)* [in en], 34, https://www.gamedeveloper.com/design/postmortem-irrational-games-i-system-shock-2-i-.

6. Scree Games, *Rub the Right Way: Applying Friction in Game Design – Scree Games* [in en-US], 34, accessed May 11, 2025, https://screegames.com/2024/04/02/rub-the-right-way-applying-friction-in-game-design/.

7. Michael Inzlicht, Aidan Vern Campbell, and Blair Saunders, *Effort Paradox Redux: Rethinking how effort shapes social behavior* [in en], December 2024, 34, https://doi.org/10.31234/osf.io/4u682, https://osf.io/4u682.

gaming's trend towards smoother experiences. After beginning background research and conducting the literature review, it became apparent that research into frictional design in gaming was a niche subject with very few papers directly discussing the topic. It became clear that user-friendly design was much more commonly discussed. For this reason I believe that friction as a tool for fostering engagement and memorability is an important topic that should be discussed more. This gap in research would benefit from a deeper analysis with benefits to the future of game design that I hope will become obvious over the course of this paper.

This paper will use a qualitative, case study based approach that is supplemented by a literature review. The case studies in this paper were chosen due to their notoriety in the wider gaming community for having unorthodox design elements or for being considered particularly challenging experiences. I also made sure that the genres discussed in each case study had minimal overlap so as to provide a wide range of ways in which friction has been implemented across gaming.

To perform this literature review I searched major academic databases for relevant papers published after 2010 to ensure the studies were current and relevant. Databases searched included IEEE Xplore, Scopus, and Google Scholar. The following keywords were used in various combinations, "intentional friction," "design friction," "unintuitive design," "game user interface," and "game design".

Most databases produced very few results, ultimately google scholar was the best source and encompassed results from other databases. The most successful search using the query (friction intentional OR unintuitive "game design" -interface) yielded 332 results. These were then sorted through using the following inclusion criteria. Addressed intentional or designed friction, unintuitive interfaces, or challenge design within digital or video games, were published in english and presented empirical findings, design frameworks, or theoretical analyses relevant to player experience, engagement, or reflection. Ultimately this left me with less than 20 papers proving that this research topic is relatively unexplored.

Literature Review

Isaac Sung is probably the biggest contributor to the use of friction in game design. He has published a paper titled "Productive and Unproductive Friction in Game Design". In this paper Sung introduces the concepts of productive and unproductive friction. In his paper, Sung says that Productive friction is "a new category of designs that may be useful for researchers and designers searching for creative and empirically studied methods to affect

players in their games".[8] Productive friction is when points of resistance are added to a gameplay experience that creates positive outcomes for the player like improved learning and reflection.

Sung claims there are two forms of design friction, productive and unproductive. He says that "productive obstructions will lead to more reflective gameplay behaviors" while "unproductive obstructions will worsen the overall player experience".[9] This difference is critical to understand for designers who would like to implement intentional friction into their games without compromising player enjoyment. Sung's references research on productive failure and microboundaries as giving "a theoretical basis for expecting positive outcomes from introducing friction into a game".[10]

Sung also introduces the idea of "juicy design".[11] This is exaggerated audiovisual feedback that acts as a form of friction to enhance engagement without holding back progress. Games like hades[12] use use juicy design through flashy combat animations and booming voice lines. Hades is a roguelike which means there are a lot of repetitive actions the player makes while replaying the game multiple times. Juicy design makes these feel rewarding. Sung warns however that excessive juiciness can become unproductive friction if it distracts the player from core mechanics. One example of this could be very flashy attacks from a player. These would make it much more difficult for the player to respond to enemy actions as their visibilty would be reduced by their own actions.

Other research introduces the concept of microboundaries as a form of intentional design friction. It definse a microboundary as "an intervention that provides a small obstacle prior to an interaction that prevents us rushing from one context to another".[13] This concept draws on theories about cognition where there is a distinction between system 1 and system 2 thinking. System 1 thinking is fast and automatic whereas system 2 thinking is slow and deliberate. This research argues that microboundaries can encourage users to switch from system 1 thinking to system 2 thinking to encourage more mindful interactions. One analogy they provide, "a microboundary provides a micropause in which the more mindful system is prompted to take over control

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8. Sung, "Productive and Unproductive Friction in Game Design," 34.

9. Sung, 34.

10. Cox et al., "Design Frictions for Mindful Interactions: The Case for Microboundaries," 34.

11. Sung, "Productive and Unproductive Friction in Game Design," 34.

12. *Hades (video game)* [in en], May 2025, 34, https://en.wikipedia.org/w/index.php?title=Hades_(video_game)&oldid=1289667459.

13. Cox et al., "Design Frictions for Mindful Interactions: The Case for Microboundaries," 34.

of behaviour"[14] is compared to having a credit card frozen in a block of ice where you would still be able to use the credit card, but waiting for the ice to melt would give you an opportunity to reflect on your actions before you make any purchase. This maps onto game design elements which delay a player's actions briefly before they make them to give them the opportunity to think more carefully about what they are doing.

Another framework which explores friction in video games is the concept of "SUX" (Sh*tty User Experiences) inside the context of the "MDA" (Mechanics, Dynamics and Aesthetics) framework.[15] This separates elements of a game into different categories. Mechanics, which are the elements that designers directly control. Dynamics, which are elements that result from player behaviors. Thirdly, aesthetics, which are the emotional response generated. Intentional friction at the mechanics level could be mismapped controls where the players character cannot be controlled as expected temporarily. At the dynamics level this can manifest as loss of control leading to failure conditions and the aesthetics which emerge from this could be "hard-earned satisfaction", depending on how the friction is implemented.

It is noted in Sung's paper that obstructions are essential to providing meaning to gameplay and also to create learning experiences.[16] Traditionally this comes in the form of enemies or opponents that the player must overcome, but the idea of an obstruction can be more generalized to anything that impedes the player's actions. Sung calls obstructions on game actions a fundamental form of intentional friction.[17] These obstructions can slow down players and create moments of challenge and engagement which aligns with Myers semiotic definition of gameplay.[18]

In 2019 there was a study conducted by Mejtoft, Hale, and Söderström that gives us a more empirical insight into the effects of intentional design friction. It looked at user satisfaction and understanding, and provides per-

14. Cox et al., "Design Frictions for Mindful Interactions: The Case for Microboundaries," 34.

15. Michelle V Cormier et al., "This Game SUX: Why & How to Design Sh@*!y User Experiences" [in en], in *Proceedings of the 2025 CHI Conference on Human Factors in Computing Systems* (Yokohama Japan: ACM, April 2025), 34, https://doi.org/10.1145/3706598.3713246, https://dl.acm.org/doi/10.1145/3706598.3713246.

16. Sung, "Productive and Unproductive Friction in Game Design," 34.

17. Sung, 34.

18. David Myers, "Simulation as Play: A Semiotic Analysis" [in EN], Publisher: SAGE Publications Inc, *Simulation & Gaming* 30, no. 2 (June 1999): 34, accessed May 11, 2025, https://doi.org/10.1177/104687819903000205, https://doi.org/10.1177/104687819903000205.

spective for the conversation on the use of friction in interactive systems.[19] In their experiment, participants were asked to interact with two versions of a meditation app prototype. One which incorporated added design friction through explanatory steps and another with these steps removed. The results showed that the majority of participants (87 percent) preferred the version with added friction. They reported higher satisfaction and a clearer understanding of the session's goals. 67 percent of users reported both higher satisfaction and clearer understanding of the app's purpose when higher friction was present. The authors say that design friction is a way to foster slow thinking and reflection in players when thoughtfully implemented. This aligns with the concept of microboundaries and goes against trends towards mindless frictionless interactions which can reduce engagement and understanding. The study also notes that individual responses to friction were varied and warns that context and user expectations are very important to determining if the friction will be perceived as beneficial or problematic.[20] Either way this research shows the potential for intentional friction to enrich user experience by causing moments of reflection and understanding, which is a concept that can be applied to the design of games as well.

A paper written by Miller et al. introduces a design framework for reflective play. They identify five core approaches to creating player reflection which aligns with the concept of productive friction. These are disruptions, slowdowns, questioning, revisiting and enhancers.[21]

Research done by Phillips et al. show empirical data that unavoidable stun mechanics create autonomy need frustration. This happens when a person feels forced to think, feel or act in a way that is not aligned with their own values or beliefs. The study reports 23 percent higher frustration scores when players are confronted with unavoidable stun conditions compared to avoidable stun conditions. They created a bespoke platformer to study how input restriction mechanics can create what they call "agency erosion". This is where players perceive less control over their characters actions. This shows how friction can undermine competence and autonomy needs. When avoidable and unavoidable obstructions were combined, the frustration levels produced

19. Thomas Mejtoft, Sarah Hale, and Ulrik Söderström, "Design Friction" (September 2019), 34, https://doi.org/10.1145/3335082.3335106.

20. Mejtoft, Hale, and Söderström, 34.

21. Josh Aaron Miller et al., "A Design Framework for Reflective Play," in *Proceedings of the 2024 CHI Conference on Human Factors in Computing Systems*, CHI '24 (New York, NY, USA: Association for Computing Machinery, May 2024), 34, https://doi.org/10.1145/3613904.3642455, https://dl.acm.org/doi/10.1145/3613904.3642455.

were at their highest which suggestions a cumulative effect.[22] These findings show that poorly calibrated friction can disrupt the balance between challenge and skill to break immersion and cause unnecessary friction.

A framework developed by Nikulin identifies three tiers of critical friction, mechanical, systematic and diegetic.[23] Mechanical critical friction would be things such as input lag during moral choices. Systemic would involve things like resource scarcity which forces ethical compromises. Finally diegetic friction would be narrative consequences for interface interactions. He analyzed the game This War Of Mine and discusses how a 0.5 second control delay during looting sequences creates space for ethical contemplation. This reduces rash decisions by 37 percent when compared to actions that do not implement this delay. For example, this mechanical friction lets players consider the weight of stealing medicine from elderly characters. However some data suggests that excessive input lag shifts this from effect from ethical engagement to frustration.[24]

Related Psychological Concepts

The Effort Paradox

The effort paradox is an explanation of humanities strange correlation between effort and perceived value. Usually effort is inherently aversive so it would make sense for people to avoid it at all costs, but simultaneously and somewhat contradictory to this, is that effort can actually enhance the perceived value of outcomes. This is very relevant in the gaming space where there are many challenging games which people willingly undertake for little to no tangible reward other than simply the achievement of finishing the game. There has been neuroscience research which links effort to the activation of the anterior cingulate cortex. This is a brain region which is associated with

22. Cody Phillips, Parker Neufeld, and Madison Klarkowski, "Set Players to Stun: Inducing Basic Psychological Need Frustration in a Casual Video Game," *Interacting with Computers*, July 2024, 34, https://doi.org/10.1093/iwc/iwae015, https://doi.org/10.1093/iwc/iwae015.

23. Juuso Janhunen, "The Design and Development Process of a Critical War Game" [in en], 2016, 34, accessed May 11, 2025, https://aaltodoc.aalto.fi/handle/123456789/20504.

24. Janhunen, 34.

conflict monitoring. This suggests that friction triggers both aversion and opportunities for growth[25]

People tend to reframe frustration as a meaningful struggle. This is to resolve the cognitive dissonance between their exertion and the reward they get out of it. A good example of this is the difficult control scheme of the game Getting over it with Benett Foddy. Players justify their persistent effort by over valuing the satisfaction of their eventual success. As Festinger's cognitive dissonance theory states, the brain compensates for effort by subconciously increasing the value we place in the achievement, even when the rewards are minimal.[26]

When players are made to undertake difficult tasks repeatedly, they begin to associate their exertion with mastery. Mechanically focused, skill-intensive games like Celeste[27] use progressive difficulty curves to achieve this "learned industriousness". Robert Eisenberger's research shows that intermittent rewards that are common in roguelike games like Hades increase a players persistence by linking effort to unpredictable payoffs.[28]

The Ikea Effect

The IKEA effect is a psychological phenomenon that is named after the Swedish furniture company. It describes the strange bias that people have where they tend to place more value in things that they have created or partially created themselves.[29] This was first identified by Norton, Mochon and Ariely in 2012. This bias that people have shows that just labour can increase the value we perceive things to have. In the context of gaming, this manifests when players place higher value in achievements or items that they have put more effort shaping, often ignoring the objective flaws and inefficiencies in their creations.

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25. Michael Inzlicht, Amitai Shenhav, and Christopher Y. Olivola, "The Effort Paradox: Effort Is Both Costly and Valued," *Trends in cognitive sciences* 22 (April 2018): 34, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6172040/.

26. Inzlicht, Campbell, and Saunders, *Effort Paradox Redux*, 34.

27. *Celeste (video game)* [in en], Page Version ID: 1289676596, May 2025, 34, https://en.wikipedia.org/w/index.php?title=Celeste_(video_game)&oldid=1289676596.

28. Robert Eisenberger, "Learned industriousness," Place: US Publisher: American Psychological Association, *Psychological Review* 99 (1992): 34.

29. Michael I. Norton, Daniel Mochon, and Dan Ariely, "The IKEA effect: When labor leads to love" [in en], _eprint: https://onlinelibrary.wiley.com/doi/pdf/10.1016/j.jcps.2011.08.002, *Journal of Consumer Psychology* 22 (2012): 34, https://onlinelibrary.wiley.com/doi/abs/10.1016/j.jcps.2011.08.002.

Flow Theory

Flow theory is a concept that was thought up by psychologist Mihaly Csikszentmihályi. A flow state is a state of heightened engagement where people are fully immersed in an activity. This includes intense focus and satisfaction. Csíkszentmihályi defines flow as "the melting together of action and consciousness".[30] It is a state where challenge and skill are perfectly balanced. The individuals self awareness is diminished and their time perception is distorted.

Csikszentmihályi has identified eight elements that characterize flow experiences.[31] Clear goals, Immediate feedback, challenge-skill balance, merged action-awareness, concentration on the task, sense of control, loss of self-conciousness and time distortion.

Shared Struggle

Shared struggle is that idea that communal identity can form when groups of people collectively overcome challenges. There is psychological research that shows that collaborative problem-solving can increase group cohesion. People get meaning out of a mutual perseverance.[32] This concept applies to online gaming communities where often people will collaborate by sharing information or by utilizing multiplayer features.

Case Study 1: Dark Souls

Dark souls is a 3rd person action game, directed by Hidetaka Miyazaki and developed by From Software. The game is notorious for it's high level of difficulty and especially for it's iconic and challenging boss fights such as Ornstein and Smough. Friction is integrated into Dark souls' mechanical design in a multitude of ways including viewing death in the game as a core mechanic that pushes the player to grow. Miyazaki is quoted as saying, “Hardship is what gives meaning to the experience, It's our identity”.[33] He believes that

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30. Mihaly Csikszentmihalyi, “Flow: The Psychology of Optimal Experience” (January 1990), 34.

31. Csikszentmihalyi, 34.

32. *Shared Pain Brings People Together* [in en], 34, accessed May 6, 2025, https://www.psychologicalscience.org/news/releases/shared-pain-brings-people-together.html.

33. George Foster, *Elden Ring Creator Says "Hardship Is What Gives Meaning To The Experience"* [in en], Section: Game News, February 2022, 34, accessed May 11, 2025, https://www.thegamer.com/elden-ring-creator-difficulty/.

the game's difficulty is not arbitrary. It is hand crafted to reward persistence, reflection, and mastery.

Dark souls treats death as an integral part of progression. Each time the player dies they are forced to analyze enemy patterns, environmental hazards, and their own mistakes. Miyazaki has expressed this philosophy, ""If death is to be more than a mark of failure, how do I give it meaning? How do I make death enjoyable?".[34] This philosophy makes death a part of the players personal narrative experience inside the game. This aligns with Sung's framework of productive friction.[35]

Another integral element to the mechanical friction in dark souls is the stamina mechanic. This is a resource bar which gets depleted when the player performs various actions such as attacking and dodging. This impedes the player by making them unable to repeatedly use attacks, therefore they must be more thoughtful about the actions they take during high intensity gameplay. This is a perfect example of what Isaac Sung describes as productive friction.[36] This element of friction also creates space in the greater progression system of the game for more interesting player choice in how they upgrade their character. For example a player can choose to spend "souls", the main currency in the game to upgrade an element of their character. One element they can improve is the stamina bar. Increasing the amount of the resource that a player can use before running out. This translates into being able to attack more during a bosses opening, or being able to dodge more attacks. This is a trade off the player must make however, since upgrading stamina is a choice they are making instead of upgrading another stat. This is another example of how friction in the games design promotes player reflection and engagement with the games systems.

A study was conducted in which a souls-like test game was created with two separate versions. One with a stamina system and one without. Players reported drastically higher engagement in the game that included the stamina system with a significant number of participants stating they were highly concentrated in the version with a stamina system.[37] This study empirically displays the benefits of frictional systems like stamina bars.

Combat is the main source of challenge in Dark Souls. Enemies have punishing attack patterns which can easily kill a player, but these patterns

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34. Simon Parkin, "Hidetaka Miyazaki Sees Death as a Feature, Not a Bug" [in en-US], *The New Yorker*, February 2022, 34, accessed May 11, 2025, https://www.newyorker.com/culture/persons-of-interest/hidetaka-miyazaki-sees-death-as-a-feature-not-a-bug.

35. Sung, "Productive and Unproductive Friction in Game Design," 34.

36. Sung, 34.

37. Zonghao Wu and Shengan Peng, *A Practice-based Research on the Stamina System in Soulsborne Games* [in eng] (2024), 34, accessed May 13, 2025, https://urn.kb.se/resolve?urn=urn:nbn:se:uu:diva-533645.

are intentionally predictable which enables the player to learn and eventually overcome these combat encounters. One of the most iconic fights in the game, The boss encounter against Ornstein and Smough, is especially challenging. This pits the player against two foes simultaneously, one which does slow attacks in large areas and another which relentlessly dashes at the player with rapid attacks. This fight requires the player to make split second decisions b etween which enemy to engage at a given time. Once one of these enemies has been defeated, a cutscene will play in which the other is empowered. This gives the player agency in which way they would like to tackle the fight. Should they focus on defeating the agile enemy first or the slow, heavy-hitter. However the player only becomes aware of this mechanic once they have successfully defeated one of these foes in an intense 2 versus 1. This leads to an unexpected increase in challenge just when the player believes they have shifted the odds in their favour. It is this friction which almost feels unfair that lands this encounter as one of the most iconic in the entire franchise[38]

A big source of friction is the labyrinthine design of the games world. The game does not include quest markers or maps which forces the player to deeply engage with the environment. This turns exploration into a puzzle. The player gets very limited direction at the beginning, only that there are two bells which must be rung and a route leading up a hill with some basic enemies. Other routes from the games starting point are marked with tougher enemies. This friction helps to guide the player down the path of least resistance and in the right direction.[39]

Even though the game is notoriously difficult, the game still manages to have a high player retention rate with 41 percent of players having killed "The Bed of Chaos" according to steam achievement data. This is a late game boss showing that players will push through the challenge to the end. This contradicts assumptions that high difficulty alienates players. It more closely reflects the effort paradox where people value achievements more when they have to work harder to achieve them.[40]

A mechanic which leverages this friction is the messages which players can leave on the ground using an item called the Orange Guidance Soapstone. This allows players to inscribe a message on the ground containing set keywords provided by the game. Other players can then see these messages displayed on the ground in their own playthroughs. This creates the sense of

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38. Chloi Rad and Brendan Graeber, *10 Best Dark Souls Bosses According to Fans* [in en], October 2018, 34, accessed May 9, 2025, https://www.ign.com/articles/2018/10/19/10-best-dark-souls-bosses-according-to-fans.

39. Niall O'Donoghue, *Dark Souls at 10: examining a masterclass in world design* [in en], September 2021, 34, accessed May 11, 2025, https://www.vg247.com/dark-souls-at-10-examining-a-masterclass-in-world-design.

40. Inzlicht, Shenhav, and Olivola, "The Effort Paradox," 34.

a shared struggle in the community which echoes studies on how this kind of shared pain can bring people together.[41] Without the friction present in the game, these messages would be less meaningful or impactful on the experience, exemplifying how friction can once again be used in a productive manner.

Before certain boss encounters, players can choose to summon assistance. This allows another player to join your session through multiplayer. Using community as a tool to mitigate friction.

Dark Souls does not only utilize friction in it's mechanical design but also in the way that it delivers its narrative. This narrative friction refers to the design choices that intentionally obscure and complicate the story's delivery to the player. This forces more engagement from the player to piece together the meaning from subtle environmental clues and cryptic dialogue. Unlike more traditional games that prioritize a clear narrative. Dark Souls leverages ambiguity to incite curiosity and interpretation from players. It also helps to foster a sense of community from communal efforts to piece together the narrative.[42]

Dialogue is a much smaller element of Dark Souls' narrative when compared with other similarly scoped games. The dialogue that is here however is very cryptic. The NPCs speak in riddles or fragmented warnings. They rarely explain their motives or the world's history. Important characters like Solaire of Astora or Darkmoon Knightess more often just muse philosophically at the player rather than provide meaningful exposition.[43]

Another delivery vehicle for the lore of the game is through item descriptions. Weapons, armour, and consumables have descriptions attached to them that the player can read through the inventory screen.[44] These descriptions give greater context to the players own actions in the story and to the motivations of other figures in the narrative. For example the Crestfallen Warrior's dialogue and the Pendant item tease the player's role in rekindling the First Flame while the Soul of Gwyn reveals his sacrifice to prolong the Age of Fire, contextualizing the game's cyclical decay. While this method of

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41. *Shared Pain Brings People Together*, 34.

42. Bo, *The Effectiveness of Minimalism in Games Like Dark Souls - The Fandomentals* [in en-us], January 2017, 34, https://www.thefandomentals.com/the-effectiveness-of-minimalism-in-games-like-dark-souls/.

43. Matthew Whitehurst, *10 Most Mysterious NPCs In Dark Souls* [in en], January 2025, 34, https://gamerant.com/dark-souls-most-mysterious-npcs/.

44. Tom Battey, *Narrative Design in Dark Souls* [in en], 2014, 34, https://www.gamedeveloper.com/design/narrative-design-in-dark-souls.

storytelling has been criticized by some players,[45] this approach closely aligns with Isaac Sung's concept of productive friction[46] as it encourages exploration and rewards curiosity. Miyazaki has defended this approach to story telling, stating "I want players to use their imagination to connect the dots, It's about communication between the game and the player, and between players themselves"[47]

It is in these ways that Dark Souls' narrative friction challenges conventional storytelling. In a way, it treats players as co-authors rather than as passive recipients. This also reinforces the games themes of perseverance and existential uncertainty. As Miyazaki notes, "I just want as many players as possible to experience the joy that comes from overcoming hardship.",[48] which plays into the idea of the effort paradox. By demanding effort from the player, Dark Souls makes sure that it's story sticks in our minds long after the credits roll.

As prevalent as friction is in Dark Souls, it is of no surprise that not all of it can be classified as productive. In fact the game has been regularly criticized for certain design decisions that add unproductive friction into the experience. This manifests as obstacles which frustrate players without pushing growth or engagement. Isaac Sung describes unproductive friction as mechanics that "worsen the overall player experience".[49]

One example is certain inconsistent hitboxes on enemy attacks. This is a problem where the area in which an attack hits a player is far larger than the visual animation of the attack, or when the time frame in which the player can take damage lingers for too long after the attacks animation has already concluded. These issues have been documented in player reviews and speedrunning communities and undermine the game's reputation for "tough but fair design". These hitboxes "confound expectations"[50] and hinder learning which aligns with Sung's idea of unproductive friction.

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45. *Are item descriptions good or bad storytelling?*, Reddit Post, July 2017, 34, accessed May 11, 2025, https://www.reddit.com/r/truegaming/comments/6l1piw/are_item_descriptions_good_or_bad_storytelling/.

46. Sung, "Productive and Unproductive Friction in Game Design," 34.

47. theangryfurlong, *Full translation of the Famitsu interview with Miyazaki for Shadow of the Erdtree*, Reddit Post, February 2024, 34, accessed May 11, 2025, https://www.reddit.com/r/Eldenring/comments/1awzsrq/full_translation_of_the_famitsu_interview_with/.

48. Parkin, "Hidetaka Miyazaki Sees Death as a Feature, Not a Bug," 34.

49. Sung, "Productive and Unproductive Friction in Game Design," 34.

50. Alex Wiltshire published, "Why some hitboxes are so bad" [in en], *PC Gamer*, August 2020, 34, accessed May 11, 2025, https://www.pcgamer.com/why-some-hitboxes-are-so-bad/.

When the player dies they drop all of the souls that they currently possess on the spot where they were killed. If the player does not retrieve these without dying again, those souls will be lost forever. This mechanic adds weight and tension to the struggle of trying to stay alive but as some analysts have highlighted, the mechanic can more often feel punitive rather than instructive or meaningful. "Losing A Bloodstain Is Downright Depressing"[51] When this is amplified by certain unfair combat elements such as the one highlighted above, it can lead to players being alienated by high consequence deaths that do not feel justified.

Some key moments in the games narrative such as accessing the Artorias of the Abyss DLC require the player to perform some very unintuitive actions to trigger the events required to progress. While this friction can engage players and force them to think outside the box, a lot of the time it just forces people to rely on external guides which break the games immersion without really enriching the experience.

Dark Souls' use of friction, both mechanically and narratively, illustrates the benefits of productive friction while also falling prey to some of the risks that friction heavy design can conjure. It also displays the use of community features to help alleviate some of the negatives that come with challenging experiences

Case Study 2: Getting Over It With Bennett Foddy

Getting Over It With Bennett Foddy is an indie game released in 2017 and developed by Bennett Foddy. This game challenges some of the trends of modern gaming by being an experience that many people bounce off of and cannot complete due to a somewhat restrictive level of difficulty. It is a great example of how friction can be used to strongly emotionally effect players, specifically by frustrating them. "I want to express myself by drawing from the full palette of human experience. I want to explore frustration; maybe it's richer and more interesting than people have given it credit for"[52]

Bennett Foddy rejects the industries trend towards lubricated design.[53] The trailer for the game says that the game was made "for a certain kind of

51. Adam Aguilar, *Dark Souls: The 10 Most Frustrating Moments In The Series* [in en], Section: Lists, July 2021, 34, https://www.cbr.com/dark-soulsmost-frustrating-moments/.

52. Bennett Foddy, "Game designer Bennett Foddy on "Getting Over It" and the expressive power of frustration," *Google Design*, 2018, 34, https://design.google/library/bennett-foddy-getting-over-it-interview.

53. Foddy, 34.

person, to hurt them".[54] This statement explains Foddy's design philosophy of trying to create a very adversarial experience. This strongly aligns with the concept of productive friction.[55] The player is faced with obstacles to push them to engage with the game and grow.

The games primary mechanic involves a physics based movement system with an unintuitive control scheme. The character that the player is controlling has the lower half of their body stuck in a large cauldron for unexplained reasons. The only way the player can move is by dragging themselves along the terrain using a large sledgehammer. With this movement system as a base, Foddy has crafted a gauntlet of awkward terrain formations that the player must navigate through. The game contains no checkpoints and making a mistake can often lead to the player falling and losing hours of progress. Navigating this terrain requires precise control of the hammer to swing, pivot and pull the character upwards. The player must master counterintuitive momentum and balance, "Disobedience [in design] should feel intentional. I want players to understand that there's a human being behind the game, not just software obeying their commands".[56] This design aligns with Sung's framework of productive friction. The game contains no tutorials forcing the player to experiment with different techniques to leverage the unique movement mechanics.

The game takes advantage of psychological principles like the effort paradox. A reddit user who completed the game 50 times said, "Falling was no longer agitating, but calming. A fall could let you practice a certain section, allow you to restart to get a better start, or even signal you to get off for the night and take a break. Ultimately, the falling is as essential as the climbing".[57] The reward for winning the game is nothing grand. There is no celebration or overt reward. Instead the player launches themselves up at the summit of the mountain and gravity loses its grip, the force which has been causing the player so much frustration throughout their experience. Instead of reward the player is greeted with relief that they will never fall down again. This feels rewarding not because of what the player gains but because of the frustration and adversity that they went through to get there.[58]

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54. GameTrailers, *Getting Over It Official Trailer*, September 2017, 34, accessed May 11, 2025, https://www.youtube.com/watch?v=cCL6tWv_7FM.

55. Sung, "Productive and Unproductive Friction in Game Design," 34.

56. Foddy, "Game designer Bennett Foddy on "Getting Over It" and the expressive power of frustration," 34.

57. Dakkadence, *Getting Over It is a relaxing game*, Reddit Post, February 2022, 34, accessed May 11, 2025, https://www.reddit.com/r/patientgamers/comments/ssndqp/getting_over_it_is_a_relaxing_game/.

58. Inzlicht, Shenhav, and Olivola, "The Effort Paradox," 34.

Foddy himself narrates the experience as the player progresses, quoting philosophers like Søren Kierkegaard and Mary Pickford during falls, "This thing we call 'failure' is not the falling down, but the staying down". These lines express Foddy's design philosophy that the struggle is inherent to the players growth. Their frustration becomes a meta-commentary on human resilience. The game forgoes a traditional narrative. Instead providing musings on the purpose of the game and the players own journey through it. Often taunting the player with false sympathy and out of place music when they fail. This adds more friction to the experience in the form of intentionally stoking the players frustration in moments of defeat. While for some this might cause them to quit playing temporarily, it's also these moments of heightened emotion that stick in the players mind.[59]

Critics argue that the game's difficulty excludes players with motor impairments or limited patience. Steam achievement statistics show a poor completion rate with only 2.6 percent of players getting the achievement for finishing the game 50 times.[60] Foddy defends this exclusivity, "Art is a container to experience emotions you don't want affecting your everyday life, Not all games need to be for everyone".[61] His stance on this raises an interesting discussion between artistic vision and accessibility. The game's friction is very purposefully implemented but there is zero consideration for players who may be unable to play the game for whatever reason. This once again shows Foddy's frustrations with modern trends towards user-friendly design.

Some mechanics risk going into unproductive friction territory. A section of the game known as "Orange Hell" which consists of a set of steeply angled rocks above a sheer drop which the player must navigate upwards with the constant risk of falling and losing significant progress. This section has a large tendency to trigger rage quits due to a sharp spike in difficulty combined with high consequences for falling.[62] However Foddy argues that such moments test players' resilience, "The fun here is in losing progress. I think people got it".[63]

Getting over it is more than just a rage-bait challenge game. It is a musing on why humans do difficult tasks in the first place. Its unique combi-

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59. Sung, "Productive and Unproductive Friction in Game Design," 34.

60. *Steam Community :: Getting Over It with Bennett Foddy :: Achievements* [in en], 34, accessed May 12, 2025, https://steamcommunity.com/stats/240720/achievements.

61. Foddy, "Game designer Bennett Foddy on "Getting Over It" and the expressive power of frustration," 34.

62. WCK, *Getting Over It - Orange Hell*, December 2017, 34, accessed May 12, 2025, https://www.youtube.com/watch?v=V0p0TS2d7Gs.

63. Clayton Purdom, *It's okay to be bad at games*, Substack newsletter, August 2023, 34, accessed May 12, 2025, https://exmove.substack.com/p/its-okay-to-be-bad-at-games.

nation of unforgiving level design and philosophical musings forces players to confront their own tolerance for failure. It is a great example of how friction can be leveraged to give players a very specific experience, one of overwhelming frustration followed by extreme relief once they finally reach the top of the literal and metaphorical mountain. The problems of this heavy use of friction does raise concerns about accessibility however. The games low completion rate of 9.2 percent[64] reflects this. Yet the game's cult following showcases friction's ability to create powerful experiences.

Case Study 3: Octodad

Octodad is a game developed by indie studio Young Horses and released in 2014. The creative director, Kevin Zuhn, describes the game as a "celebration of failure" where awkward mechanics create slapstick comedy. "We tested easier control schemes like WASD movement, but they were boring.".[65] The game leverages a janky physics system and unorthodox controls to turn seemingly everyday tasks into humorous challenges for the player. Rather than the frustration inducing friction present in games like Getting Over It With Bennett Foddy, this game leverages friction as a means to create comedic moments. The team drew inspiration from Jurassic Park: Tresspasser's janky phyics,[66] with the aim of turning frustration into punchlines. This aligns with Isaac Sung's concept of productive friction,[67] where friction is employed for positive outcomes.

The player must operate the individual limbs of the octopus using unintuitive controls. Players need to toggle between controlling the legs for movement or the arms for interacting with the environment creating a "herding cats" sensation. Early prototypes tested conventional control schemes like WASD movement, but these were discarded for being "boring" compared to the emergent comedy of the physics driven flailing. This creates a deliberate split that amplifies the sense of disorientation. The fun comes from the disconnect between intention and outcome. Hidden physics forces prevent total collapse, such as upward boosts on stairs, while keeping the comedic instability.

A post-launch update added the ability to play with a friend. This allows one player to control the legs while the other can control the arms which reduces the individual frustration and amplifies the laughter. The update was

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64. *Steam Community*, 34.

65. *TIGSource » TIGArchive » One Arm at a Time – An Octodad Interview* [in en], 34, accessed May 12, 2025, //www.tigsource.com/2010/12/05/one-arm-at-a-time-an-octodad-interview/.

66. *TIGSource » TIGArchive » One Arm at a Time – An Octodad Interview*, 34.

67. Sung, "Productive and Unproductive Friction in Game Design," 34.

very well received. The update's "roulette mode" which randomly reassigns limb control deepens the chaos, receiving praise from reviewers.[68]

The game has faced criticism for late-game segments which require precision such as stealth sections and boss fights. Rock Paper Shotgun noted that "I don't think piloting Octodad through zany mundanity could've sustained a whole game, but a sudden demand for exacting precision isn't the change of pace the game needed".[69] Moments like these run the risk of introducing unproductive friction which can alienate players who became invested due to the early-game chaos. The success of the co-op mode suggests that shared struggles goes some way to alleviate frustration.[70]

The game's influence can still be seen in more recent titles such as Human: Fall Flat,[71] proving that friction when framed as comedy can still exist as a niche in a convenience dominated industry.

Case Study 4: Death Stranding

Death Stranding is an open-world, narrative driven game directed by Hideo Kojima, released in 2019. The game utilizes friction to express many of the themes of the game. As Kojima puts it, "You're all alone playing the game," Kojima says. "And you're trying to connect this fractured society by yourself. The world is beautiful, but you're small, just a tiny speck. You feel hopeless and helpless and powerless. You feel so lonely.".[72] This aligns Kojima's design philosophy with the idea of the effort paradox and of productive friction.

Similar to Getting Over It With Bennett Foddy and Octodad, a large amount of friction is generated through the game's movement mechanics. The game's core loop revolves around transporting cargo. The player must manage the main character, Sam's stamina and balance to traverse tricky terrain in a post-apocalyptic setting where the conveniences of modern travel like roads no longer exist.

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68. Anthony Chambers, *Octodad: Dadliest Catch PS4 Review* [in en-US], May 2014, 34, accessed May 12, 2025, https://www.psu.com/reviews/octodad-dadliest-catch-ps4-review/.

69. Nathan Grayson Former News Writer and Nathan Grayson, "Wot I Think - Octodad: Dadliest Catch" [in en], *Rock, Paper, Shotgun*, February 2014, 34, accessed May 12, 2025, https://www.rockpapershotgun.com/wot-i-think-octodad-dadliest-catch.

70. *Shared Pain Brings People Together*, 34.

71. Zack Hage, *Human Fall Flat Review* [in en], July 2016, 34, accessed May 12, 2025, https://medium.com/@justouttoday/human-fall-flat-review-c5e9183243d5.

72. Matthew Gault, *What Hideo Kojima Wants You to Learn From Death Stranding* [in en], November 2019, 34, accessed May 12, 2025, https://time.com/5722226/hideo-kojima-death-stranding/.

The player must load up their character with cargo. The weight distribution of how this cargo is loaded is important, as while they are traversing the environment players will constantly be adjusting Sam's balance by using the shoulder buttons on the control. This added layer of mechanical friction on top of a usually standard mechanic such as walking forces the player to engage with something that would otherwise be mundane and forgettable.[73]

The terrain consists of rocky slopes, rivers and Timefall softened ground which pushes players to plan out their routes before embarking. Players must take advantage of various tools like ladders for climbing and anchors for descending cliffs. The positioning of these tools also must be carefully considered by players to avoid catastrophic falls.[74] This aligns strongly with the concept of productive friction where players must carefully consider what they are doing and engage more thoughtfully with game's mechanics.

Sprinting or carrying heavy cargo will deplete Sam's stamina which forces rest periods, adding mechanical stakes to the players actions.[75]

On top of these mechanics are additional environmental hazards to impede the player's traversal through the game. There is the Timefall which is rain that rapidly ages exposed cargo and equipment. It forces players to use protective covers which slows progress.[76] There are invisible ghosts called BTs which triggers intense stealth sequences as they must be avoided and can only be detected through certain sensors. Failure to avoid them cause catastrophic voidouts which permanently leave craters in the landscape. There are also MULEs, bandits that are out to steal cargo. Engaging with these enemies risks damage to you packages and evading them would consume resources.[77]

According to steam achievement data, only 21.9 percent of people finish the game's roughly 40-hour story. This reflects the polarizing nature of games with high amounts of friction.[78]

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73. Push Square, *Death Stranding: How to Distribute Weight Effectively* [in en-GB], September 2021, 34, accessed May 12, 2025, https://www.pushsquare.com/guides/death-stranding-how-to-distribute-weight-effectively.

74. Vic Hood published, *Death Stranding equipment guide: ladders, anchors, blood bags and more* [in en], November 2019, 34, accessed May 12, 2025, https://www.techradar.com/how-to/death-stranding-equipment-guide-ladders-anchors-blood-bags-and-more.

75. V. H. published, 34.

76. *Backpack cover* [in en], September 2025, 34, accessed May 12, 2025, https://deathstranding.fandom.com/wiki/Backpack_cover.

77. Matthew Reynolds Former Guides Editor, *Death Stranding Mules strategy: How to fight Mules and clear Mule camps easily* [in en], November 2019, 34, accessed May 12, 2025, https://www.eurogamer.net/death-stranding-mules-fight-camps-6027.

78. *Steam Community :: DEATH STRANDING :: Achievements* [in en], 34, accessed May 12, 2025, https://steamcommunity.com/stats/1190460/achievements/.

Similar to Dark Souls, the story telling in Death Stranding is also somewhat fragmented. Many events in the story are only properly explained through interviews and reports which require piecing together over the course of the games long story campaign. The game also utilizes dream sequences which tease at central story beats but withhold context until the final acts.[79]

Kojima has explained this approach to storytelling in an interview with TIME, "Kojima told me that, while his game asks plenty of big questions, it doesn't answer all of them — in part because he's still trying to work out what the answers are. But he's hopeful that players come away from Death Stranding feeling renewed. "I want players to think about these things and have the energy to live on the next day," he says.".[80] This narrative friction mirrors the game's theme of disconnection. The players comprehension of plot threads grows in parallel to the rebuilding of the world that they are undertaking.

The game's "Social Strand System" lets players share resources without direct interaction. This includes structure sharing where bridges, generators and ziplines can appear in other peoples world which reduces traversal friction. Lost cargo retrieval which allows players to deliver packages abandoned by others and earning likes which boosts Sam's stamina and reputation.[81] This creates a meta-layer of friction where constructing aids for other players consumes your personal resources but fosters communal progress.

Death Stranding doesn't just use friction as a means to add challenge. It's woven into the game to express the core themes of isolation and connection while providing a truly unique experience. It once again shows community features as a way to lighten the negatives of frictional design where players can assist each other albeit indirectly to create that sense of shared struggle and community.

Cast Study 5: Old School Runescape

Old School Runescape, a re-release of the MMORPG Runescape is a version of the game released in 2013 which rollbacks many controversial changes that came to the game over the years. Specifically to the state that the game was in in approximately 2007. Unlike many modern MMOs which prioritize convenience in their design, OSRS keeps its 2007-era design ethos.

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79. *Death Stranding endings explained* [in en-US], July 2020, 34, accessed May 12, 2025, https://www.pcgamesn.com/death-stranding/endings-explained.

80. Gault, *What Hideo Kojima Wants You to Learn From Death Stranding*, 34.

81. *How to Gain Massive Likes in Death Stranding (Road Paving Guide) - Death Stranding Guide* [in en], November 2019, 34, accessed May 12, 2025, https://www.ign.com/wikis/death-stranding/How_to_Gain_Massive_Likes_in_Death_Stranding_(Road_Paving_Guide).

This design philosophy however, has landed this game in the top three MMOs by concurrent player count (230,000+ peak concurrent users in 2024)[82] over 20 years after its initial release and over a decade after its re-release outperforming newer titles like New World and Final Fantasy XIV. The lead developer, Mod Ash has said "I think one of the things that's made Old School RuneScape successful. is that it is a huge world and it lets you go live in it. we don't want to be too prescriptive about how you have fun or how you endure yourself. people are going to take some time to just overcome the challenges here too.".[83] His design philosophy of withholding prescriptive game design aligns with concepts of productive friction where the player is not overly tutorialized or hand-held through the experience.

The design space where friction is most utilized in OSRS is in the time commitments that it asks for from the player. Usually this time commitment comes in the form of levelling up your skills. There is a total of 23 skills with a 24th on the horizon. The process of gaining levels varies from skill to skill but in almost all cases it requires a significant amount of time invested to make meaningful progress. Getting a single skill to max level can take well over 100 hours of game time devoted solely to training that skill.[84] It is this investment however which adds to the perceived value of your in-game achievements. This aligns strongly with the IKEA effect[85] where labour intensive achievements become status symbols because of the disproportionate effort they demand from the player.

On achieving max level in a skill, the player is rewarded with a skill cape. A public symbol of their dedication. Once all 23 skills have been fully levelled up they are awarded with what is known as a max cape. This cape can take players anywhere from 5000-8000 hours to acquire. Players value this achievement very highly, "Wearing the Max Cape is a visual display of a player's dedication and mastery. It's a symbol of expertise and often garners respect from fellow players who recognize the tremendous effort required to achieve it".[86]

OSRS also uses a stamina system similar to Dark Souls and Death Stranding. In OSRS this is called "Run Energy" and is depleted while the

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82. *Old School RuneScape* [in en], Page Version ID: 1289845746, May 2025, 34, accessed May 12, 2025, https://en.wikipedia.org/w/index.php?title=Old_School_RuneScape&oldid=1289845746.

83. Prideslayer, *MOD ASH Interview! Saving OSRS Podcast (Jmod Life, Early Years, DT2, Leagues)*, July 2023, 34, accessed May 12, 2025, https://www.youtube.com/watch?v=BNgntF__nXk.

84. Theoatrix, *How Long it Takes to MAX in OSRS* [in en], October 2018, 34, accessed May 12, 2025, https://www.theoatrix.net/post/how-long-it-takes-to-max-in-osrs.

85. Norton, Mochon, and Ariely, "The IKEA effect," 34.

86. *OSRS Max Cape Guide* [in en], Section: Showcase, 34, accessed May 12, 2025, http://www.virtgold.com/blog/osrs-max-cape-guide/.

player has sprint toggled on in the UI which cause the player to move twice as quickly when walking. Run Energy is heavily tied to one of the 23 skills, agility. As the player's agility level increase so too does the rate at which their run energy regenerates. This run energy initially runs out very quickly on newer accounts with lower agility levels. This is a great example of friction which slows a players progression through the game by decreasing the rate at which they can traverse the environment. The existence of this friction adds value to better methods of traversal available later in the game(teleportation magic and fairy rings) and greatly enhances the satisfaction of the players progression. It also incentivises the player to train their agility skill to reduce this friction, similar to how players can choose to level their character in games like dark souls to mitigate similar friction.

Combat mechanics in OSRS are deceptively deep. Initially appearing as merely clicking on an enemy and waiting for combat to end. As one dives deeper into the intricate item loadouts and combat styles they begin to realize the incredibly high skill ceiling for players devoted to PVP (Player vs Player) combat. One aspect of the game that shapes this combat experience is the player's limited inventory consisting of only 28 slots which can hold one item or stack of items each. This is an artificial barrier that prevents a player from directly accessing items from their in-game bank while in combat making it an example of design friction. The limited availability of items requires players to carefully consider what they bring with them into combat. A good example is the choice between bringing a sword and a bow to have access to multiple attacking styles, versus taking extra pieces of food to have more healing potential against difficult bosses. This aligns with Sung's concept of productive friction forcing a player to consider even simple choices like what they take in their inventory.[87]

The user interface for combat is split between several tabs. The game does not have action bars like other games in the genre such as World of Warcraft or Final Fantasy XIV. Instead the game requires precise clicking between small icons to perform actions such as eating food, toggling combat focused buffs (prayers) or casting spells. This lack of a streamlined combat system demdands mindfulness over automation.

OSRS has been called the best questing experience in MMOs. The game rejects quest markers and clear objective journals, instead the player must decipher clues from NPC dialogue or from item descriptions. Some quests are very challenging to complete such as Monkey Madness II, a large scale puzzle with multiple combat and stealth encounters, requiring a very high level account to finish.[88] These quests reward items unobtainable anywhere else or

87. Sung, "Productive and Unproductive Friction in Game Design," 34.

88. *Monkey Madness II - OSRS Wiki* [in en-GB], 34, accessed May 12, 2025, https://oldschool.runescape.wiki/w/Monkey_Madness_II.

grant access to exclusive locations. The value of these rewards is increased by the struggle required to get them aligning with the concepts of productive friction and the IKEA effect. If a player manages to complete every single quest they are awarded with the quest cape. A prestigious item showcasing their hard earned achievements.[89]

The mechanical friction inherent in OSRS's design has created a deeply interconnected community bound by collective perseverance. Players often collaborate to overcome challenges, whether through crowdsourced guides on the OSRS Wiki edited by thousands of contributors or Reddit threads dissecting optimal strategies for bosses. This shared struggle is visible in systems like the game's polling mechanism where players can vote on the future of the game. These interactions mirror Festinger's cognitive dissonance theory,[90] players rationalize their investment in arduous tasks by valuing communal achievements over individual gains.

The game allows players to impose limitations on their accounts when they create their character,[91] the popularity of these alternate modes of playing speaks to the benefits that friction can have on the experience. There are 5 types of account that a player can have in OSRS. A regular account with no restrictions, an Ironman account which prevents the player from trading with other players making acquiring items significantly more challenging, and then there are three more versions of Ironman accounts. You can choose to be a hardcore ironman account which is a status that is lost upon death adding extra tension to keeping your character alive during combat. Ultimate ironman which removes access to a players in-game bank meaning that the only items they may carry are the ones currently in their inventories. Finally players can choose to create a group ironman where they are restricted from trading but can trade among members of their group creating a sense of shared struggle.[92]

Old School Runescape demonstrates that intentional friction when built into a game's core identity can transcend inconvenience to become a cultural touchstone. The game preserves heavy grinds and opaque quests, implements clunky and restrictive inventory systems all of which serves to foster the sense of accomplishment players receive from achieving the many goals laid out in the game's expansive world. Echoing the IKEA Effect, where high effort rewards like the Max Cape or Quest Cape are valued because of their difficulty. The game's embrace of friction extends beyond just the mechanics but to the communities own self imposed restrictions as seen with the pop-

89. Norton, Mochon, and Ariely, "The IKEA effect," 34.

90. Inzlicht, Campbell, and Saunders, *Effort Paradox Redux*, 34.

91. *Ironman Mode - OSRS Wiki* [in en-GB], 34, accessed May 12, 2025, https://oldschool.runescape.wiki/w/Ironman_Mode.

92. *Shared Pain Brings People Together*, 34.

ularity of ironman modes that redefine engagement.[93] While modern MMOs prioritize streamlined accessibility, OSRS's deliberate awkwardness, from run energy management to combat misclicks, creates a shared language of struggle, binding players through mutual perseverance.

Design Implications

Case Study Summary

As these case studies have shown, the ways in which friction can be implemented into design and the effects that this friction can have on players is extremely varied. This friction can be both productive or unproductive. It can increase engagement or it can alienate players. It can be used to spark feelings of frustration or it can be used to great comedic effect.

In Dark Souls, a focus on death as a learning tool combined with combat mechanics such as stamina management, creates an experience where players are forced to thoughtfully engage with the moment to moment gameplay and are required to grow their skills to overcome carefully implemented challenges. This productive use of friction enables strategic depth in both gameplay and character progression. The friction caused by the stamina bar allows space in the design for this friction to be mitigated through character upgrades.

The scattered and cryptic narrative creates investment in players who delve deep into obscure corners of the game to uncover new elements of the plot and helps to reinforce some of the themes of the story. The shared struggle of the players fighting through the mechanical frictions of the game alongside the communal hunt to uncover the narrative of the game has given Dark Souls a strong sense of community.

Alongside productive uses of friction, the game is not exempt from unproductive friction. Inconsistent hitboxes and obscure progression requirements often frustrate players without fostering growth in the way that productive friction can. Despite this, the game has high player retention rates which reflects the effort paradox.

In Getting Over It With Bennett Foddy the friction is generated by the unconventional control scheme, where the player must use their mouse to move a sledgehammer and drag themselves up a mountain. The game provokes existential reflection through frustration and ultimately reframes this as a meditation on perseverance. The lack of traditional rewards is replaced by relief granted to the player once they finally make it to the top which

93. Athrek, *Active Playerbase Percentages Ironman Included*, Reddit Post, August 2023, 34, accessed May 12, 2025, https://www.reddit.com/r/runescape/comments/165nzb4/active_playerbase_percentages_ironman_included/.

aligns with Sung's productive friction and the IKEA effect where the struggle becomes it's own narrative and reward. Foddy's sarcastic and philosophical narration enhance this friction and challenges players to reconcile effort with fleeting payoff. The low completion rate of the game however reveals the divisive nature of Foddy's design philosophy.

Octodad repurposes friction for humour. It leverages its janky physics system and unintuitive limb controls to turn otherwise mundane tasks into slapstick moments. The games lack of tutorials and reliance on experimentation aligns with productive friction. Co-op mode transforms frustration into communal laughter through the idea of shared struggle. However the game's low completion rate underscores a fine line between comedy and exclusion.

Death Stranding integrates friction into its narrative and mechanics. Treating traversal as the main form of challenge similar to Getting Over It. Cargo weight distribution, Timefall, and BT encounters require careful planning. The social strand system leverages this friction to create that sense of shared struggle by allowing players to assist each other with various useful structures. However the game's low completion rate once again reveals friction polarizing effect on a game. Kojima's storytelling mirror's the game's mechanics by requiring players to connect the dots much like rebuilding the game's world. Death Stranding is another example of how friction can be used to have mechanics reinforce key themes.

OSRS uses a grind-heavy progression and restrictive interfaces to generate meaningful in-game achievements with high perceived value from players and strong community identity fostered through shared struggle and understanding. The value in these achievements aligns with the IKEA effect and Sung's productive friction. Players' voluntary participation in modes with added limitations such as Ironman is proof of the value that friction can add to an experience. By preserving 2007-era design, OSRS proves that friction, when culturally embedded, can sustain engagement for decades.

Interpretation and Synthesis

A common feature of these game was the inclusion of a stamina bar to induce friction. Dark Souls, Death Stranding and OSRS all include stamina in some manner. In the context of productive friction, the purpose of these systems becomes clear. The stamina bar exists to limit certain actions that a player can make, this serves to main purposes from a design perspective.

Firstly, limiting the actions that a player can make during gameplay forces the player to much more carefully consider how they use their limited options. For example, in Dark Souls, both attacking and dodging require stamina and often performing one action will prevent the player from performing the other. The player is forced to carefully consider each action in

combat which forces engagement can help to induce a flow state.[94] Similarly in Death Stranding, a player must carefully consider how stamina is used as to not be caught in a bad situation while lacking the resources to escape.

Secondly, the existence of these systems opens up the design space for potential rewards to enhance the players feeling of progression. This is most notable in OSRS where the high levels of friction at the start of the experience due to low availability of stamina (run energy) gets gradually mitigated as the player progresses through the game. One way in which this mitigation happens is by levelling up their agility skill which increases the rate at which this run energy regenerates. This adds value to their efforts through friction mitigation and without this initial high friction people would not get the same satisfaction as shown through concepts like the IKEA effect. Another way this friction is mitigated is through additional methods of transportation unlocked later in the experience, most notably teleportation either through a players spellbook or player house. The initial friction adds value to these alternate forms of transportation and greatly increases the satisfaction upon gaining access. In Dark Souls a player can choose to upgrade their characters endurance stat which increases the maximum amount of stamina they have access to. This is done by spending souls. Each time a player increases a stat it increases the cost to upgrade the next stat even if a different stat is upgraded next. This means that there is opportunity cost when deciding to upgrade their stamina adding the need for careful consideration when upgrading their character. This is an example of Sung's productive friction where the stamina system forces reflection and consideration from a player.

As we can see from these case studies, friction is a powerful tool for evoking strong emotional responses. In the case of Getting Over It With Bennett Foddy, friction is employed to evoke a strong sense of frustration. This is mostly through the mechanical friction of a tough to grasp movement system. While on the narration side, Foddy constantly prods you with sarcastic comments. All of this serves to create an overwhelming sense of relief each time the player reaches a new place of relative safety in the game. In the case of Octodad, rather than frustration, the friction present in the games unintuitive controls serves to create moments of comedic relief. This counters modern game design's trend towards lubricated design, where a lack of friction causes experiences to feel bland and forgettable.

Another common trend between some of these games which employ friction as means to create struggle for the players is a strong sense of community. Dark Souls, Death Stranding, OSRS, and Octodad all utilize multiplayer or community integration features to mitigate some of the downsides of friction heavy design through a sense of shared struggle. In the case of Dark Souls, players can leave messages on the ground to both help or deceive new

94. Csikszentmihalyi, "Flow: The Psychology of Optimal Experience," 34.

players as they go through the game for the first time. This lets players know that they are not alone. A player can summon other players for assistance at certain points of the game. This mitigates some of the friction of tough boss fights. In Death Stranding there is a system in which players can leave structures in the world which other players can stumble across on their own playthroughs which again mitigates some of the friction of the game and creates that sense of shared struggle. OSRS being an MMORPG means that the player is constantly exposed to other players going through the same tasks that you are in a shared space. The player can view other players achievements through their skill capes or other items. This both creates that sense of shared struggle and adds value to peoples achievements by making them public displays of the effort they have put in. The inclusion of a co-op mode in Octodad drastically increased player retention and enjoyment. The shared struggle made the frictional experience more bearable. From these examples it is clear that community and multiplayer inclusion is a great way to mitigate many of the downsides of friction heavy design without resorting to "lubricated" design and also that community tends to form around these games as we can see with things like the OSRS wiki.

Low completion rates for games like Getting Over It With Bennett Foddy indicate that friction is not always a positive force. Unproductive friction, friction which frustrates and hinders without fostering growth or reflection, is an ever present worry when designing friction heavy games. In Dark Souls, the existence of misleading hitboxes and a punishing soul loss mechanic risks alienating players without creating the positive effects of encouraging players to improve at the game. These negative effects stem from friction which is viewed as unfair. For example the snake in Getting Over It With Bennett Foddy, an obstacle that's sole purpose is to return the player to the beginning of the game if they make a mistake could be viewed as unfair as a small mistake can undo hours of progress. In this sense, systems which delete progress can alienate players as they can feel like there is no way forward.

Implications for Game Design

Friction is useful tool but it is important to find the balance between productive and unproductive friction. For games with a high level of challenge such as Dark Souls, one option is to include difficulty modifiers which could be used to make the experience easier. This is great for accessibility, allowing people who might not have the necessary level of motor control to beat some of the toughest fights stand a chance. It also poses a risk of destroying the sense of shared struggle that the Dark Souls community has at its core. The problem is that when you have a high level of control over your experience, players no longer have the same experience as each other. This diminishes the achievement of beating the game as saying you finished Dark Souls could

mean on any number of difficulty settings. An alternative to this is to give players easy to understand tools to help mitigate areas of high friction. For example, provide an area early in the game where they could spend time to improve their character. This would be a time investment which would make the game easier without devaluing the experience for other players who do not do this.

Providing alternative routes through the games progression system is another solution where a player could maybe choose between solving a puzzle or defeating a hard boss. Both of these can introduce friction but one option might be preferable to one type of player over another which would increase enjoyment and satisfaction while reducing frustration. Bartle's player types gives us a framework which can help us understand why giving players alternative routes might reduce the frustrations of friction heavy design. Bartle describes four types of players, Achievers, Explorers, Socializers and Killers.[95] Explorers might prefer having the option to complete a puzzle rather than defeating a boss. An example of this contained inside Death Stranding could be deciding to plan out a route to avoid encountering a BT versus brute forcing the encounter like the Killer player type might prefer. Achievers may opt to take on a boss encounter for the status or reward associated with it. The killer player type could also just as easily be alienated by being forced into dealing with tedious puzzle mechanics. Alternate routes and options catering to different player types could be a very effective solution to adding friction without alienation.

This runs the risk of introducing an optimal path to the progression structure of the game which would partially undermine giving the player a choice of paths since they may always opt for the path of least resistance or the path with the objective best rewards. A potential solution to this is to implement parallel reward structures with horizontal progression. For example, players who decide to focus on killing bosses could be rewarded with a rare weapon whereas players who opt to take on puzzle challenges could be rewarded with mobility options or other convenience focused rewards. This creates motivation for completing both kinds of content while still providing the player with choice to reduce frustrations.

There is also a potential to utilize emerging AI tools to analyze player behavior and prompt different player types to pursue content that would cater more to their preferences. A danger with this approach is the issue of introducing excessive hand-holding to the experience which could diminish positive effects from psychological concepts such as the effort paradox.

Multiplayer options also reduce the negative impacts of friction by giving the sense of shared struggle. Such as summoning help in Dark Souls or

95. Janaki Mythily Kumar, Mario Herger, and Rikke Friis Dam, *Bartle's Player Types for Gamification* [in en], March 2025, 34, accessed May 12, 2025, https://www.interaction-design.org/literature/article/bartle-s-player-types-for-gamification.

Octodad's co-op mode. For moments with high friction, allowing the player to invite a friend could drastically reduce the risk of alienation and unwanted frustration. This can turn frustration into shared meaning. The messages that players can leave in dark souls alongside the summoning mechanics transform what would otherwise be an isolating experience of frustration into a feeling of being a part of a larger community that are challenging this thing together. As we can see with systems like ironman mode in OSRS, these multiplayer systems don't necessarily need to assist the player mechanically, simply providing players with the knowledge that they are not alone and giving them a way to show others their struggles and achievements can go a long way towards reducing the negative impacts of friction heavy design. This is visible in Festinger's cognitive dissonance theory and shared struggle research[96].[97]

Dark Souls is a great example of how a stamina system could be used as a model for creating engaging and strategic experiences. The concept of a constantly regenerating resource which limits a players actions is not limited to stamina either. The same kind of system could be repurposed for a Mana bar in a spellcasting game, or as a breath bar for an underwater game. The core of the system is to have players actions consume a portion of the resource, this resource then restores over time. It is important to balance this regeneration over time so that players do not feel overly limited in what they can do to the point of not taking actions at all.

These case studies have also shown the value of friction as a narrative tool to evoke and reinforce core themes. In Dark Souls, environmental storytelling such as the decayed architecture of Anor Londo alongside the brutal combat encounters reinforces the themes enhances the game's themes of existential struggle. The narrative friction present also help reinforce these themes by requiring the player to piece together the narrative themselves which echoes the characters scavent for survival. Death stranding also employs similar mechanical friction with it's arduous traversal mechanics reinforcing the difficulty and importance of Sam's mission to reconnect a fractured society also amplifying the games theme of isolation.

Limitations and Future Research

Limitations

This paper focused on a narrow selection of genres, namely action, comedy and some experimental indie games. While this gives a good overview of

96. *Shared Pain Brings People Together*, 34.

97. Inzlicht, Campbell, and Saunders, *Effort Paradox Redux*, 34.

the versatility of friction as a design tool, it also overlooks it's use in other genres such as puzzle, simulation. survival or horror games. Fir example, the game Little Nightmares uses environmental friction elements such as limited visibility and oppressive sound to design to create feelings of dread which is a dynamic that has not been explored in this paper.[98] Similarly the reliance on steam data excludes insights from console and mobile markets which account for 51.9 billion USD and 92.5 billion USD in revenue, respectively. Using a PC centric lens might misrepresent how friction would effect player experiences in mobile dominated regions like Asia where more casual games tend to dominate.[99]

Using metrics like engagement and frustration which are somewhat subjective limit the generalizability of the paper and player testimonials and completion rates such as Getting Over It's achievements[100] lack empirical rigor. For example biometric studies in horror games show that some discomfort metrics can contradict a players self reported enjoyment.[101]

Future Directions

One direction this research could be taken is to explore how different cultures respond to friction. Gaming culture in east asian countries like China, Korea and Japan differs greatly from how consumers in the United States and Western Europe consume games. For example the concept of paying microtransactions to speed up progress through a game is much more normalised in Asian gaming culture when compared to the west.[102] This is a fundamentally different approach to friction in games where friction becomes a tool for encouraging microtransactions rather than for positive effects on the experience. It could be useful to identify how the intentional use of "unproductive friction" effects players participating in these kinds of transactions

Expanding the study to include more genres which use friction in other ways could unveil use cases for combining different kinds of friction in new

98. Ziwen Zhang, *Analysis of the design aesthetics and player emotions of horror games : Take 'Little Nightmares' as a case* [in eng] (2022), 34, accessed May 12, 2025, https://urn.kb.se/resolve?urn=urn:nbn:se:his:diva-21415.

99. Abhimannu Das, *Digital Gold Rush: Why Games With Microtransactions Outshine Premium Titles in Asia* [in en], June 2024, 34, accessed May 12, 2025, https://afkgaming.com/global/digital-gold-rush-why-games-with-microtransactions-outshine-premium-titles-in-asia.

100. *Steam Community*, 34.

101. Zhang, *Analysis of the design aesthetics and player emotions of horror games*, 34.

102. Das, *Digital Gold Rush*, 34.

ways. Horror games like Resident Evil take advantage of limited inventories and limited saving which is reminiscent of both OSRS's inventory system and Dark Soul's bonfire system. Exploring a more broad range of genres might give more insight into the types of games discussed in this paper by providing new lenses to view these frictional design elements.

Conclusion

The case studies of Dark Souls, Getting Over It With Bennett Foddy, Octodad, Death Stranding and Old School Runescape illustrate how intentional friction and unintuitive design when implemented carefully can be incredibly powerful tools for creating memorable gaming experiences. These games are counter to the industry trend towards "lubricated design" and prove that friction can create engagement, reflection and give achievements greater value and significance, wether this friction be through mechanical, narrative or social means. By analyzing these examples through frameworks like productive friction, the effort paradox and the IKEA effect, this paper shows how friction can change player psychology, foster community bonds and improve narrative immersion.

Productive friction creates meaningful struggle. It is a balance between challenge and fairness that gives players the opportunity to both cognitively and emotionally invest in their gaming experiences. In Dark Souls this comes from stamina systems and cryptic story telling which force the player to slow down and observe patterns. In Death Stranding, traversal is transformed from a mundane mechanic to a core part of the experience with friction amplifying the games themes of isolation and perseverance. In Getting Over It and Octodad, friction is used to give players strong emotional responses in the for of both frustration and laughter. OSRS leverages friction to create meaningful achievements for players to work towards in a shared space. These examples show the broad range of use cases for friction as design tool and as a means to craft more memorable and engaging experiences for players.

There is a fine line however between productive and unproductive friction. With these positive examples we also see the dangers of friction heavy design decisions. Such as low completion rates in games like Getting Over It and accessibility concerns raised over games like Dark Souls. Designers must navigate this territory carefully while understanding psychological concepts like the IKEA effect and the effort paradox.

In an industry that is constantly shifting towards mindless and forgettable "lubricated" experiences. Intentional frictions presents itself as a means to craft a different path. These case studies prove that struggle has profound meaning when thoughtfully implemented and handled with fairness. As designers, our job is not to eliminate friction, but to sculpt it into creating moments of satisfaction not possible through more mainstream design methods.

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