Patenting Video Gameplay

Gregory D. Schwartz*

Gameplay is the core of video games, a two-hundred-billion-dollar business larger than the film and music industries combined. For years, commentators and public interest groups have claimed that video gameplay patents are stifling innovation—concerns that have garnered little attention from scholars or courts. That may soon change. Recent literature speculates that gameplay patents are rare and that challenges in acquiring them have forced companies to prioritize "copy-resistant" game elements such as high-definition graphics and sprawling open worlds. But advances in artificial intelligence are making such elements increasingly easy to recreate, prompting a renewed interest in gameplay innovation and a growing urgency to assess the merits of gameplay patents.

This Article provides the empirical and analytical foundation for understanding the existence and merits of video gameplay patents. It trains a naive Bayes classifier to provide novel insight into gameplay patenting trends, uses case studies to identify distinguishing features of desirable video gameplay patents, and shows how recent Federal Circuit decisions impose stricter patentability requirements for video gameplay than the gameplay of physical games. In sharp contrast to the prevailing view among commentators, this Article argues that certain video gameplay patents can benefit the industry. It further argues that adopting the analysis from physical gameplay cases would create a new class of beneficial video game patents, providing critical protections to an industry under threat.

* J.D., Stanford Law School, 2025. Special thanks to Mark A. Lemley and Sonali Maitra for their invaluable feedback and encouragement. I am also grateful to Julian Nyarko and BJ Ard for their insightful comments. Finally, thank you to the diligent editors at the *UC Irvine Law Review*, namely Gloria Yang, Gavin Repman, Devapriya Roy, Arthur Rozek, Cooper King, Daniel Ginsberg, Kirstin Henry, James Yocca, Ethan Kent, Catherine Lee, Tyler Yang, Ethan Hamburg, Lindsay Waters, Megan Griffin, and Preston Taylor. I wrote this Article as a full-time student at Stanford Law School, and the opinions expressed are solely my own.

Introduction 140
I. Patents in the Industry 143
A. Overview 144
B. Case Studies 150
1. The Loading Screen Minigame 151
2. The Ghost Car 155
3. The Medium 157
C. The Rising AI-Imitation Threat 160
II. Patents in the Courts 164
A. Software 165
B. Physical Games 167
C. Video Games 169
III. Protecting Video Game Pieces 171
A. The Proposal 171
B. The Benefits 174
C. Answering Objections 176
1. Doctrinal Differences 176
2. Industry Norms 178
Conclusion 180
Appendix 182

INTRODUCTION

In 2023, Nintendo registered thirty-one patents associated with its hit video game *The Legend of Zelda: Tears of the Kingdom*.[1] Compared to the hundreds of thousands of software patents successfully applied for each year,[2] this number appears unnoteworthy. Patents are designed to incentivize innovation,[3] and *Tears of the Kingdom* was widely celebrated as a groundbreaking single-player experience.[4] Developed over six years and requiring substantial resources, it represented a significant investment in creativity and technology.[5] Yet, Nintendo's patents prompted a wave of condemnation from the gaming community, with critics labeling them as broad, abusive, and bad for the industry.[6] This reaction echoed the

1. Gloria Levine, *Nintendo Patents Zelda Tears of the Kingdom Mechanics*, 80LV (Aug. 10, 2023), https://80.lv/articles/nintendo-patents-zelda-tears-of-the-kingdom-mechanics/ [perma.cc/D3YM-JCNE].

2. *Infra* Figure 2.

3. *See* Jay P. Kesan, *Economic Rationales for the Patent System in Current Context*, 22 GEO. MASON L. REV. 897, 898–99 (2015).

4. Andrew King, *Tears of the Kingdom Looks Like an Innovative Breath of Fresh Air*, THEGAMER (Apr. 2, 2023), https://www.thegamer.com/tears-of-the-kingdom-innovative-triple-a/ [perma.cc/NZ 5T-45NR] ("Tears of the Kingdom[] left me feeling blown away by a gaming presentation for the first time in nearly five years."); Keza MacDonald & Keith Stuart, *The 20 Best Video Games of 2023*, GUARDIAN (Dec. 18, 2023), https://www.theguardian.com/culture/2023/dec/18/the-20-best-vide o-games-of-2023 [perma.cc/8534-FBVQ] (ranking Tears of the Kingdom as the best game of the year).

5. John Rairdin, *The Legend of Zelda: Tears of the Kingdom (Switch) Review*, NINTENDO WORLD REP. (May 23, 2023), https://www.nintendoworldreport.com/review/63817/the-legend-of-zelda-tears-of-the-kingdom-switch-review [perma.cc/7HQY-S3S8].

6. *See, e.g.*, Derek Garcia, *Zelda: Tears of the Kingdom Is Going to Ruin Hundreds of Other Games*, SCREEN RANT (Sep. 3, 2023), https://screenrant.com/zelda-tears-kingdom-patents-nintendo/ [perm

community's general distaste for video game patents,[7] as well as criticism from public interest groups[8] and law students.[9]

To be sure, not all video game-related patents provoke such opposition. The gaming industry boasts a rich history of technological patents that have spurred innovation without controversy. Graphical Processing Units (GPUs), initially developed for video games, were instrumental to the development of artificial intelligence (AI).[10] Online gaming has driven improvements in high-speed, low-latency internet,[11] while early advances in virtual reality—motivated by gaming—have facilitated the technology's spread into healthcare, education, and engineering.[12]

Rather, commentators contest the merits of video *gameplay* patents—that is, patents covering in-game features experienced directly by players. These include a patent on specific enemy behaviors in response to player choices[13] and a *Pokémon*-

---

a.cc/GV6J-2SBY]; Kenneth Shepard, *Nintendo Is Trying to Patent Some Really Broad Tears of the Kingdom Mechanics*, KOTAKU (Aug. 11, 2023), https://kotaku.com/nintendo-is-trying-to-patent-some-really-broad-tears-of-1850730637 [perma.cc/3NLQ-S5UN]; Ed Nightingale, *Nintendo Patents Link's Tears of the Kingdom Abilities, and the Loading Screen*, EUROGAMER (Aug. 9, 2023), https://www.eurogamer.net/nintendo-patents-links-tears-of-the-kingdom-abilities-and-the-loading-screen [perma.cc/V5AJ-6KTR].

7. *See, e.g.*, Andrew King, *Patenting Game Mechanics Is the Biggest Threat Facing the Games Industry*, THEGAMER (Aug. 12, 2023), https://www.thegamer.com/patenting-mechanics-bad-for-game-industry-nintendo-tears-of-the-kingdom/ [perma.cc/4MHJ-FGUC]; *Video Game Patents: A Double-Edged Sword*, INTELL. PROP. INS. SERVS. CORP. (Oct. 22, 2024), https://ipisc.com/video-game-patents-a-double-edged-sword/ [perma.cc/YPX8-VLCU] ("To many gamers and indie developers, patents can feel like unnecessary barriers that prevent innovation in an industry that thrives on creativity."); Quang Hong, *Question of the Week Responses: Video Game Patents*, GAME DEV. (June 8, 2005), https://www.gamedeveloper.com/business/question-of-the-week-responses-video-game-patents [perma.cc/2M5G-D39G] (listing community responses to whether video game concepts should be patentable).

8. *See, e.g.*, Elliot Harmon, *The Loading Screen Game Patent Finally Expires*, ELEC. FRONTIER FOUND. (Dec. 4, 2015), https://www.eff.org/deeplinks/2015/12/loading-screen-game-patent-finally-expires [web.archive.org/web/20250926200525/https://www.eff.org/deeplinks/2015/12/loading-screen-game-patent-finally-expires]; Adi Kamdar & Daniel Nazer, *January's Stupid Patent of the Month: A Method of Updating "Grass" in Video Games*, ELEC. FRONTIER FOUND. (Jan. 30, 2015), https://www.eff.org/deeplinks/2015/01/january-stupid-patent-month-method-updating-video-game-grass [web.archive.org/web/20250514165831/https://www.eff.org/deeplinks/2015/01/january-stupid-paten t-month-method-updating-video-game-grass].

9. *See, e.g.*, Peter VandeVort, *The Futility of Patents on AAA Video Game Mechanics*, MICH. TECH. L. REV. BLOG (Oct. 29, 2022), https://mttlr.org/2022/10/the-futility-of-patents-on-aaa-video-game-mechanics/ [perma.cc/T6QR-YRFX].

10. Vivek Singh, *Game-Changer: How the World's First GPU Leveled Up Gaming and Ignited the AI Era*, NVIDIA (Oct. 11, 2024), https://blogs.nvidia.com/blog/first-gpu-gaming-ai/ [perma.cc/FE98-T2Q8].

11. Saad Siddiqui, *Online Gaming Is Fueling Network Innovation – and a New Era for Start-Ups*, CAPACITY (June 29, 2021), https://capacityglobal.com/news/online-gaming-is-fuelling-network-innovation-and-a-new-era-for-start-ups/ [perma.cc/Y383-XPE8].

12. Andi Cross, *The Evolution of Virtual Reality: Exploring the Past, Present and Future*, FORBES (Nov. 9, 2023), https://www.forbes.com/councils/forbesbusinesscouncil/2023/11/09/the-evolution-of-virtual-reality-exploring-the-past-present-and-future/ [web.archive.org/web/20250906052319/https://www.forbes.com/councils/forbesbusinesscouncil/2023/11/09/the-evolution-of-virtual-reality-exploring-the-past-present-and-future/].

13. Rhys Wood, *Warner Bros.' Nemesis Patent Is Terrible for the Games Industry - Here's Why*, TECHRADAR (Feb. 13, 2021), https://www.techradar.com/news/warner-bros-nemesis-patent-is-terrible-for-the-games-industry-heres-why [perma.cc/D7K2-M4YM]. For details on the patent, see U.S. Patent No. 279,522A1 (filed Mar. 25, 2016).

associated patent on throwing an object to capture a creature.[14] They can be contrasted with technological developments in hardware or in backend software like network management.[15]

These commentators' critiques have yet to be evaluated by legal scholarship. If they are correct, then video gameplay patents are damaging a massive industry. Video game development and distribution reached $188.8 billion in revenue last year,[16] more than the film and music industries combined.[17] If these commentators are incorrect, current patent law doctrine could be handicapping innovation and leaving video game companies vulnerable to recent developments brought on by AI.

Scholars speculate that video gameplay patents are rare,[18] in part because of ambiguity over whether video gameplay is patentable subject matter.[19] In response, gaming companies currently focus more on "copy-resistant" content like sprawling open worlds and less on innovative gameplay.[20] But AI tools are rapidly decreasing the cost to generate high-definition visuals and vast swaths of content.[21] As the informal alternatives to intellectual property protection diminish—and copyright protection remains unattainable for gameplay[22]—courts and the gaming community

---

14. Tom Phillips, *Nintendo and The Pokémon Company Seek Injunction Against Palworld Plus Fine and Damages, Developer Says*, EUROGAMER (Nov. 8, 2024), https://www.eurogamer.net/nintendo-and-the-pokemon-company-seek-injunction-against-palworld-plus-fine-and-damages-developer-says [web.archive.org/web/20250901032259/https://www.eurogamer.net/nintendo-and-the-pokemon-company-seek-injunction-against-palworld-plus-fine-and-damages-developer-says]. For details on this patent, see J.P. Patent No. 754,5191B1 (filed July 30, 2024).

15. This is not to suggest "video gameplay" is easy to define precisely. *See, e.g.*, *infra* notes 38–39 and accompanying text. Scholarship has used other terms to express similar concepts with slight variations. *See, e.g.*, Aidan Faustina, *Rules of the Game: Are the Rules and Mechanics of Video Games Copyrightable?*, 31 UCLA ENT. L. REV. 37, 44-46 (2025) (defining video game mechanics); Ola Davidsson, Game Design Patents - Protecting the Internal Mechanisms of Video Games? 24–25 (2004) (Masters dissertation, IT University of Göteborg) (defining game design patents).

16. MICHIEL BUIJSMAN, DEVAN BRENNAN, TIANYI GU, LESTER ISAAC SIMON, TOMOFUMI KUZUHARA, SPYROS GEORGIOU, MICHAEL WAGNER, NGOC LINH NGUYEN, BRETT HUNT, ALEJANDRO MARIN VIDA & TIAGO REIS, NEWZOO FREE GLOBAL GAMES MARKET REPORT 2024, 20 (Aug. 2024), https://best-of-gaming.be/wp-content/uploads/2024/09/2024_Newzoo_Global_Games_Market_Report.pdf [perma.cc/2QCP-M3U5].

17. Krishan Arora, *The Gaming Industry: A Behemoth with Unprecedented Global Reach*, FORBES (Nov. 17, 2023), https://www.forbes.com/councils/forbesagencycouncil/2023/11/17/the-gaming-industry-a-behemoth-with-unprecedented-global-reach/ [web.archive.org/web/20250924175258/https://www.forbes.com/councils/forbesagencycouncil/2023/11/17/the-gaming-industry-a-behemoth-with-unprecedented-global-reach/].

18. BJ Ard, *Creativity Without IP? Vindication and Challenges in the Video Game Industry*, 79 WASH. & LEE L. REV. 1285, 1332 (2022) ("[P]atents in gameplay are rare and have seldom been asserted against clones."); MARK A. LEMLEY & SONALI MAITRA, VIDEO GAME LAW 160 (2024) ("[P]atents on video game rules . . . are few and far between.").

19. Ard, *supra* note 18, at 1333–34.

20. *Id.* at 1369 ("AAA games face criticism for redundancy and lack of imagination in part because they direct most of their investments toward elements with de facto protection from copying."); *id.* at 1359 ("Many indie developers also make creative decisions that render their games copy-resistant.").

21. *See infra* Section I.C.

22. *See* Lies van Roessel & Christian Katzenbach, *Navigating the Grey Area: Game Production Between Inspiration and Imitation*, 26 CONVERGENCE 403, 406 (2020) ("[A] unique part of games compared to other audiovisual media is the . . . rule-based system, for which the game designer is typically responsible. In copyright terms, this can be considered the unprotected idea of a creative work rather than the protected expression. . . . As such, games have an 'uncopyrightable core: the actual play

will face increasingly urgent questions of whether video gameplay can and should be patented.

This Article provides the preliminary foundation and analysis for answering these questions.

Part I explores the quantity and effect of gameplay patents. It details the training of a naive Bayes classifier,[23] uses that classifier to provide the first empirical review of gameplay patenting trends, and finds that video gameplay patenting has stayed relatively low since 2014. Next, it conducts three case studies on video gameplay patents and discovers key characteristics that appear to make some gameplay patents well-suited to promote innovation. Finally, it details how AI tools are increasing the need for gameplay patents by reducing companies' abilities to guard their intellectual property without legal protection.

Part II reviews the patentability doctrine as applied to physical board games and video games. Namely, it outlines how board games are generally patentable if they are meaningfully tied to a novel, physical game piece, whereas video games are generally patentable if they involve a technological innovation. It discusses how abstract rules are not patentable on their own because generalized, sweeping claims subvert the purpose of the patent system and how the courts' requirement for physical pieces in board game patents creates concrete, reasonable claims.

Part III explores how existing doctrine could permit courts, patent examiners, and patent agents to import this board game allowance to a societally-beneficial subset of video gameplay patents. It argues that video game matter should be patentable if it is meaningfully tied to a novel, "physical" object within a virtual world. Using this rule, the patent system can provide the video game industry with increasingly-needed protection for its innovations, while ensuring that the affected patents have concrete, reasonable claims.

I. PATENTS IN THE INDUSTRY

The significance and merit of gameplay patents is intriguing and unexplored. While scholars speculate that these patents are rare,[24] some commentators go so far as to call them the biggest threat facing the industry.[25] This Part provides the first empirical review of video gameplay patents, evaluates the impact of three infamous gameplay patents, and discuss the implications of AI-assisted game development tools. It finds that gameplay patenting has remained relatively low since 2014, some kinds of gameplay patents appear to encourage innovation, and AI is likely to make gameplay patents increasingly important for the industry.

---

of the game."'); Ard, *supra* note 18, at 1318 ("Although copyright and related protections have obvious applications against bootlegging, different rules are at play when competitors copy one another to make new games. Copyright in the latter context leaves ample space for cloning."). *Contra* Faustina, *supra* note 15, at 42 (arguing that copyright protection should be expanded).

23. For a brief explanation of the classifier and its selection over other methods, see notes 32 and 50 below.

24. *See supra* note 18.

25. King, *supra* note 7.

A. Overview

Understanding video gameplay patenting trends requires identifying video gameplay patents. While the trends in video *gameplay* patenting are unexplored, prior work has used two methods to identify video game patents: keywords and Cooperative Patent Classification (CPC) codes.[26] These methods, however, have found drastically different patenting propensities and trends.

Practitioner Arjay Parhar uses the CPC code "A63F 13/55" to form a narrow class that only contains patents relating to "controlling game characters or game objects based on the in-game progress."[27] This grouping excludes patents pertaining to hardware and backend software matter such as latency reduction. This exclusion might be useful for isolating gameplay patents, but Parhar's definition also dismisses the gameplay patents that dominate the video game community's discourse,[28] and likely many more. In contrast, Ola Davidsson offers a broader class: patents whose abstracts contain the keywords "video game" or "computer game."[29] However, many video gameplay patents do not use these terms. For reference, Davidsson's class contains less than 8 percent of the patent applications from the largest video game developers.[30]

---

26. Davidsson, *supra* note 15, at 34–35 (classifying video game patents as those with "video game" or "computer game" in the abstract); Arjay Parhar, *Protecting Video Game Developers Through Mechanics Patents*, MONDAQ (Nov. 28, 2023), https://www.mondaq.com/unitedstates/patent/1395046/protecting-video-game-developers-through-mechanics-patents [perma.cc/4PAC-NZ7K] (classifying video game related patents as those with the CPC code "A63F 13/55"). Scholarship offers a third definition, although its precise details are not specified. *See* Prince C. Oguguo *Innovation and Intellectual Property Use in the Global Video Game Industry* 26 (World Intell. Prop. Org., Working Paper No. 85/2024) (using a "video game industry patent mapping strategy [] based on a combination of keywords CPC and IPC codes"). A subset of the combination is sufficient to capture most software patents. *Compare TotalPatent One*, LEXISNEXIS, https://www.totalpatentone.com [perma.cc/7CL5-BHN3] (search "(CPC:(A63F13) OR CPC:(A63F9/24) OR CPC:(A63F2300) OR CPC:(G06) OR CPC:(G10L) OR CPC:(G09B) OR CPC:(A63B69)) AND PC:(US) AND PG:(Grant)"), *with infra* Figure 2.

27. *See* Parhar, *supra* note 26.

28. *See, e.g.*, Heather Wald, *From the Mass Effect Dialogue Wheel to Shadow of Mordor's Nemesis System, Here Are 9 Video Game Patents That Might Surprise You*, GAMESRADAR (Aug. 24, 2021), https://www.gamesradar.com/video-game-patents-that-might-surprise-you/ [perma.cc/4QHS-8GQK] (listing patents, none of which are classified as A63F 13/55); Jeremy Peel, *Five Game Mechanics Legally Protected by the Companies That Made Them*, PC GAMER (Feb. 22, 2021), https://www.pcgamer.com/5-game-mechanics-legally-protected-by-the-companies-that-made-them/ [perma.cc/2PTE-PPPP] (same); Sherveen Uduwana, *A History of Video Game Patents in 5 Famous Examples*, VICE (Mar. 1, 2021), https://www.vice.com/en/article/a-history-of-video-game-patents-in-5-famous-examples/ [perma.cc/QT2Y-NMQN] (same).

29. Davidsson, *supra* note 15, at 34-35. Davidsson also handpicked a sample of "video game design" patents from U.S. Patent Classification Class 463/1, keyword search results, the portfolios of well-known companies, and infamous patents in the media. *Id.* at 40. While the sample offers insights into the classification and purpose of archetypal video game design patents, *id.* at 41, 44, this Section focuses on methods with the scalability to help investigate industry trends.

30. *See TotalPatent One*, *supra* note 26 (search "(UO:('Nintendo') OR UO:('Electronic Arts') OR UO:('Roblox') OR UO:('Take 2 Interactive') OR UO:('Bandai Namco')) AND AC:(US) AND PG:(Grant)"). The list of largest game developers is taken from the Nasdaq. BRIAN COMISKEY & SARA MEHLE, GAMING LEVELS UP, AND INTO THE METAVERSE 3 (2022), https://indexes.nasdaqomx.com/docs/PLAYR2%20Research.pdf [perma.cc/8NYX-YNA3] (listing Nintendo, Electronic Arts, Roblox, Take-Two Interactive, and Bandai Namco Holdings as the largest video game Developer/Publishers).

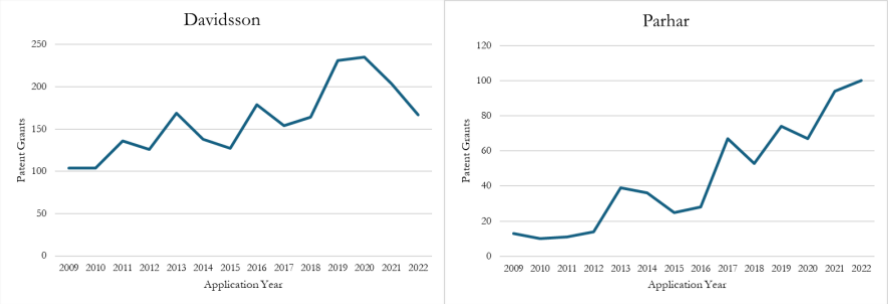

Figure 1: Prior Definitions of U.S. Video Game Patents by Application Year[31]

Further, these classifications offer very different accounts of how frequently developers patent video game innovations and how that frequency is changing. Taken together, they suggest that for video game-related inventions—not just gameplay—less than two hundred and fifty successful applications are filed annually. Further analysis suggests otherwise.

To better evaluate video gameplay patenting, I identify an over-inclusive superclass that contains nearly all video gameplay patents, manually label a random sample, and train a naive Bayes classifier to identify video gameplay patents within the superclass.[32]

The CPC code "A63F 13" for "video games" appears to be a sufficiently inclusive superclass. It encompasses 78 percent of Davidsson's class,[33] 100 percent of Parhar's class,[34] and 68 percent of the patents filed by the top video game studios.[35] The remaining patents from Davidsson and the top studios largely pertain to general image processing techniques, which are distinguishable from the user-

31. Here, and in the remainer of this Section, I review data from the years 2009–2022, collected from the TotalPatent One database on January 1, 2026. Data from the years 2023–2025 is not displayed to mitigate bias from unpublished patent applications and changes to patents' CPC codes. Data from 2009-2025 is available online, alongside the labeled sample and accompanying code. *See* Gregory Schwartz, *Supplementary Data and Code for Patenting Video Gameplay*, HARV. DATASET (2026), https://dataverse.harvard.edu/dataset.xhtml?persistentId=doi:10.7910/DVN/0RFDHV.

32. Naive Bayes is a popular algorithm for text classification problems. *See* Noah Owusu, Comparative Study of Supervised Classification Techniques with a Modified Knn Algorithm 4 (Aug. 1, 2023) (Master's thesis, University of Texas at El Paso). It is notable for its explainability and its accuracy with little training data, *id.* at 5; Harry Zhang, *The Optimality of Naïve Bayes*, *in* FLAIRS CONFERENCE (2004), both of which are especially useful when studying video game patents, *infra* note 50.

33. *See TotalPatent One*, *supra* note 26 (search "(AB:('video game') OR AB:('computer game') OR AB:('video games') OR AB:('computer games')) AND AC:(US) AND PG:('Grant')") (using Davidsson's algorithm, *supra* note 15).

34. The CPC code "A63F 13" is a superset of "A63F 13/55." *See CPC Definition - Subclass A63F*, USPTO, https://www.uspto.gov/web/patents/classification/cpc/html/defA63F.html#A63F13/55 [perma.cc/TAH2-NKKD] (last visited January 15, 2026).

35. *See supra* note 30.

facing gameplay patents that dominate the video game community's discourse[36] and are disadvantaged by current video game patentability doctrine.[37]

Next, I manually label a random sample of four hundred A63F 13 patents as "video gameplay" or "not video gameplay." This labeling prioritized a conservative definition of gameplay to better isolate unique trends, label consistently, and test speculation that gameplay is rarely patented. Patents on game settings and non-interactive spectating experiences, for example, were excluded for being insufficiently "in-game." Still, the labeling required decisions on many borderline cases. For example, patents on virtual controllers—like patents on physical controllers—were generally not labeled as video gameplay. But a patent involving user control by touching in-game objects was closely intertwined to gameplay and labeled as such.[38] A method of using user biometrics like tiredness to control in-game character attributes encompassed hardware and a form of user control, but it was labeled video gameplay for its apparent focus on its novel in-game effect.[39]

I then use the title, abstract, owner, and CPC codes of the labeled patents to train a multinomial naive Bayes classifier. Half of the labeled patents are reserved for validation testing, and the training data is balanced to improve recognition.[40] The resulting model preformed modestly, relative to machine learning standards.[41] This is unsurprising. Naive Bayes classifiers tend to be remarkably effective with small training datasets,[42] but the difficulty in classifying patents is well-documented[43] and defining "video gameplay" is challenging.[44]

Nonetheless, the classifier is significantly more accurate on the labeled testing data than prior definitions[45] and analog methods. Davidsson's definition does not attempt to isolate gameplay patents. So, for a fairer comparison, I manually identify common features in the labeled gameplay patents and construct a search algorithm using a combination of keywords and CPC codes. This is an established method for

36. *See* King, *supra* note 7 (discussing patents on player-character actions and non-player characters' reactions to the player); *Video Game Patents: A Double-Edged Sword*, *supra* note 7 (discussing the same, and patents on visual indicators and effects for the player). Some commentors have explicitly distinguished technical and user-facing improvements. *See, e.g.*, Ondrej Spanel, commenting *in* Hong, *supra* note 7 ("I have no problem with software patents which are issued about intricate algorithms, like RSA.").

37. *Infra* Part II.C.

38. U.S. Patent No. 12,383,820 (filed Dec. 2, 2021).

39. U.S. Patent No. 10,504,617 (filed Dec. 10, 2019).

40. Roughly one third of the sample was labeled "video gameplay," so I balanced the training data using the Synthetic Minority Oversampling Technique (SMOTE). *See* Nitesh V. Chawla, Kevin W. Bowyer, Lawrence O. Hall & W. Philip Kegelmeyer, *SMOTE: Synthetic Minority Over-Sampling Technique*, 16 J. A.I. RSCH. 321, 326–31, 352 (2002); Jennifer Nou & Julian Nyarko, *Regulatory Diffusion*, 74 STAN. L. REV. 897, 914 (2022).

41. The model's F1-score is 71 percent. In contrast, "many domains can expect an F1 of 80% or above for very little training data." Caitlin Cassidy, *Parameter Tuning Naïve Bayes for Automatic Patent Classification*, 61 WORLD PAT. INFO. 1, 6 (2020). For an explanation of F-scores, see F-score, BRITANNICA, https://www.britannica.com/science/F-score [perma.cc/B74Y-X3ME] (last visited July 8, 2025).

42. Zhang, *supra* note 32.

43. Cassidy, *supra* note 41.

44. *See supra* notes 38–39 and accompanying text.

45. The classifier's F1-score is 71 percent, Davidsson's F1-score was 17 percent, and Parhar's F1-score was 15 percent. For more information on their validation results, see Table A.1.

classifying patents,[46] but performs worse than the naive Bayes classifier by a substantial margin.[47]

The classifier's results across A63F 13 also help to validate its performance. As labeled by the model, video gameplay patent applications dropped relative to A63F 13 following 2014, the same year that the Supreme Court narrowed the patentability of software.[48] Also, as labeled by the model, software-focused companies like Square Enix, Namco, and Electronic Arts have significantly more video gameplay patents than mixed companies like Nintendo, Sony, and Microsoft.[49] Taken together, the naive Bayes model appears to provide the best publicly-available classification at this time, although its results remain conflated with general trends from A63F 13.[50]

Using this classifier, revenue data,[51] and an established algorithm for identifying all software patents,[52] the video game industry's gameplay patenting practice can be compared to its revenue and general software patenting trends.

---

46. James Bessen & Robert M. Hunt, *An Empirical Look at Software Patents*, J. ECON. & MGMT. STRATEGY 157, 163–64 (2007).

47. The manual algorithm's F1-score was 49 percent. This score may also be inflated from overfitting.

48. *See* Figure A.1; Alice Corp. v. CLS Bank Int'l, 573 U.S. 208 (2014).

49. Within A63F 13, the proportion of Sony, Nintendo, and Microsoft's portfolios that the model classifies as "video gameplay" is 15 percent, 29 percent, and 19 percent, respectively. Namco, Electronic Arts, and Square Enix's video gameplay patents constitute 57 percent, 39 percent, and 56 percent, respectively.

50. This classification could likely be improved with more advanced models, such as a transformer-based classifier. *See, e.g.*, *Text Classification*, HUGGING FACE, https://huggingface.co/docs/transformers/en/tasks/sequence_classification [perma.cc/B4UH-VAZZ] (last visited July 8, 2025). One advantage of the naive Bayes model, however, is its ability to perform adequately with relatively small training datasets. As video game scholarship continues to develop its vocabulary, *see, e.g.*, Faustina, *supra* note 15, at 42–48, this efficiency enables future scholarship to easily retrain the classifier on new definitions of "video gameplay" or "video game mechanics"—providing a lasting empirical foundation as terminology continues to shift.

51. Pallavi Rao, *Technology 50 Years of Video Game Industry Revenues, by Platform*, VISUAL CAPITALIST (Dec. 31, 2023), https://www.visualcapitalist.com/video-game-industry-revenues-by-platform/ [web.archive.org/web/20250819144501/https://www.visualcapitalist.com/video-game-industry-revenues-by-platform/].

52. *See* Bessen & Hunt, *supra* note 46, at 185 (using the Bessen-Hunt algorithm to identify software patents); *TotalPatent One*, *supra* note 26 (search "PG:(Grant) AND AC:(US) AND (DSC:(software) OR (DSC:(computer) AND DSC:(program))) NOT (DSC:(antigen) OR DSC:(antigenic) OR DSC:(chromatography) OR TI:(chip) OR TI:(semiconductor) OR TI:(bus) OR TI:(circuit) OR TI:(circuitry))") (applying the Bessen-Hunt algorithm).

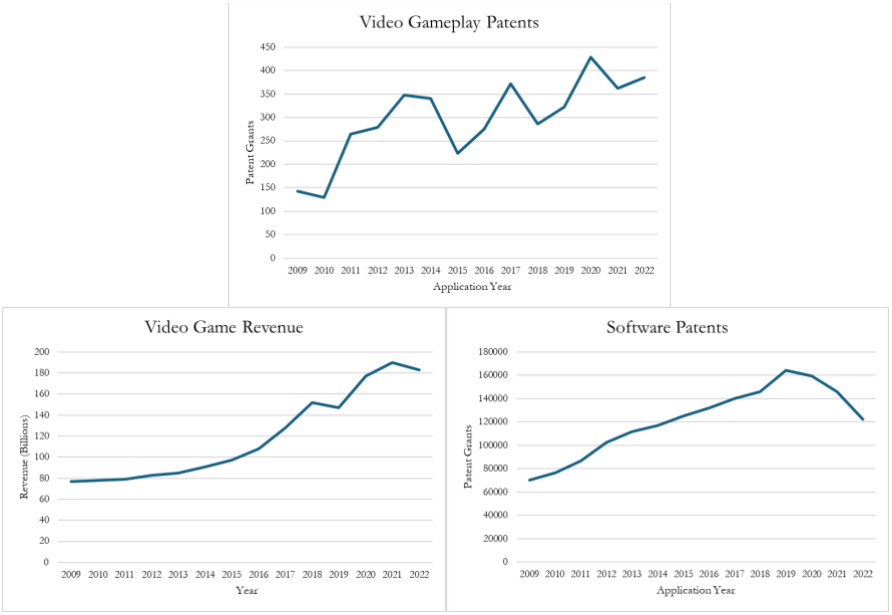

Figure 2: Comparing Video Gameplay Patents to Video Game Revenue and Software Patents

The results suggest that Parhar and Davidsson substantially underestimate the number of video game patents, especially given that the naive Bayes classifier identifies a conservatively-defined subset of video game patents.[53] The results also suggest the number of video gameplay patents have significantly increased since 2015, but, unlike Parhar's class, dropped relative to industry revenue in 2015 and remained relatively low since.

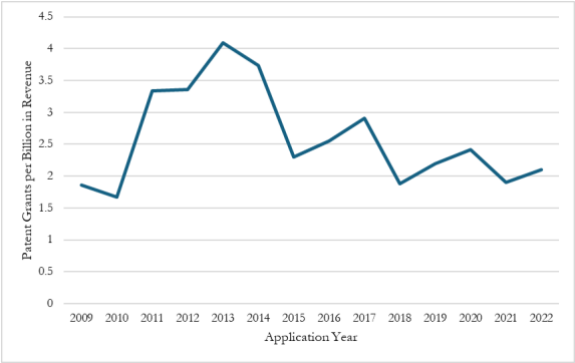

Figure 3: Video Gameplay Patent Grants Adjusted for Revenue

The results also begin to quantify speculation that video gameplay patents are rarer than other kinds of software patents,[54] placing them at roughly one patent for

53. *See supra* notes 38–39 and accompanying text.
54. *See supra* note 18.

every four hundred and seventy five million dollars in revenue in 2022, as opposed to one for every five million.[55]

To be sure, these numbers do not provide a complete picture of video gameplay patent propensity relative to investment, subject matter, or innovation. First, video game development involves more than just gameplay, especially gameplay as defined in this study.[56] One studio estimated that the largest games invest one hundred times more into content creation than software development, of which gameplay is only a subset.[57] Indeed, *Hogwarts Legacy*, the best-selling game of 2023,[58] credits roughly 3,500 professionals, only three hundred of which are engineers.[59] While software companies do not invest solely into software development either, understanding these industries' proportional investments would provide a more robust picture of their patenting propensities. Second, gameplay development might be a fundamentally less innovative exercise than other forms of software development: If gameplay development typically involves a high quantity of rote work, then a low patent-to-investment ratio would not be unusual. Finally, these numbers do not answer whether gameplay innovation has risen alongside gameplay patenting and industry growth. While anecdotes may provide some indication,[60] additional work could provide further insight.[61]

At a minimum, these findings suggest that since 2014 video game companies have developed relatively fewer gameplay innovations, have had decreased confidence that patent applications will bring additional profits from their gameplay

---

55. *See* Tom Wijman, *Newzoo's Video Games Market Size Estimates and Forecasts for 2022*, NEWZOO (May 17, 2023), https://newzoo.com/resources/blog/the-latest-games-market-size-estimates-and-forecasts [perma.cc/KS5J-GJDC] (estimating $182.8 billion in 2022 global game revenue); *Report Summary*, GRAND VIEW RSCH., https://www.grandviewresearch.com/industry-analysis/software-market-report [perma.cc/Z2AF-QU53] (last visited July 8, 2025) (estimating $583.47 billion in 2022 global software revenue); Figure 2 (estimating 385 successful video gameplay patent applications filed in 2022); Figure 2 (estimating 122,201 successful software patent applications filed in 2022).

56. *See supra* notes 38–39 and accompanying text.

57. *How Much Does Indie Game Development Cost in 2024?*, JUEGO (Aug. 29, 2023), https://www.juegostudio.com/blog/indie-game-development-cost [web.archive.org/web/20250924152403/https://www.juegostudio.com/blog/indie-game-development-cost].

58. Eddie Makuch, *The 20 Best-Selling Games of 2023 in the US*, GAMESPOT (Jan. 19, 2024), https://www.gamespot.com/gallery/the-20-best-selling-games-of-2023-in-the-us/2900-4951/ [perma.cc/U93H-B3WB].

59. *Hogwarts Legacy*, MOBY GAMES, https://www.mobygames.com/game/199341/hogwarts-legacy/credits/windows/ [web.archive.org/web/20250430000305/https://www.mobygames.com/game/199341/hogwarts-legacy/credits/windows/] (last visited Aug. 8, 2025).

60. Aubrie Cole, *AAA Game Companies Hate Innovation*, DAILY TROJAN (Oct. 10, 2023), https://dailytrojan.com/2023/10/10/aaa-game-companies-hate-innovation/ [perma.cc/73LY-3P9Y]; Evgeny Obedkov, *Cliff Bleszinski on Lack of Innovation in Games Industry: "Take a Chance, Motherf**Ers, and Trust Your Gut!"*, GAME WORLD OBSERVER (July 21, 2023), https://gameworldobserver.com/2023/07/21/cliff-bleszinski-interview-innovation-new-ip-taking-risks [perma.cc/Y3X6-JBG2].

61. There are established methodologies for answering this question that may prove effective here. *See* Roberto Fontana, Alessandro Nuvolarib, Hiroshi Shimizu & Andrea Vezzulli, *Reassessing Patent Propensity: Evidence from a Dataset of R&D Awards, 1977–2004*, 42 RSCH. POL'Y 1780, 1786 (2013) (taking a list of industry awards for innovative products and determining what proportion of those awards are associated with a patent); *see also Global Industry Game Awards*, INT'L GAME DEVS. ASS'N, https://igda.org/global-industry-game-awards/ [perma.cc/SV6U-SW5K] (providing a list of industry awards for "gameplay technology") (last visited July 8, 2025).

innovations, or both.[62] Regardless, contrary to commentators' concerns, patent filings show that gameplay patenting propensity is relatively down since the Supreme Court's narrowing of patentable subject matter. Determining whether this is desirable requires a more granular review.

B. Case Studies

Three particularly infamous examples help illustrate what video gameplay patents look like and whether they resemble desirable uses of the patent system. Outside of the video game context, there is a wealth of scholarship discussing the ways in which the patent system can promote and hamper innovation. Understanding the salience of these mechanisms in the video game industry can provide insight as to whether video gameplay patents promote innovation, and whether certain kinds of video gameplay patents are more likely to promote innovation than others.

To be sure, the usefulness of anecdotal evidence is limited, and the actual effect of the patent system is hard to ascertain even in specific cases. For example, while the most common justification for patents is that they incentivize innovation,[63] there is rarely conclusive evidence that an innovation would not have occurred but for the promise of a patent.[64] Still, the development of some innovations appears more contingent on the promise of patents than others, providing important insights into what kinds of patents are more or less likely to promote innovation in the aggregate.[65] While certainty is elusive, analyzing specific video gameplay patents can begin to clarify their effects, especially when these patents are compared to those in other industries.[66]

Some gameplay patents exemplify common critiques of software patents. Namely, that generalizable, abstract claims in software patents can cover a broad phylum of embodiments, many of which the original inventor never envisioned.[67] These examples also demonstrate how the speed of video game development can make the benefits from some innovations short-lived, undermining patent law's otherwise beneficial "trading" of a temporary monopoly for the permanent disclosure of new knowledge to the public.

However, case studies also show how some patents may have driven valuable innovations in video gameplay by allowing developers to generate additional profit from licensing and marketing. They suggest that beneficial gameplay patents may

62. A decreased patent allowance rate could also account for some of the effect, although the number of patent applications since 2014 is down relative to revenue as well. *See* Figure A.2.

63. Rachel E. Sachs, *The Uneasy Case for Patent Law*, 117 MICH. L. REV. 499, 504–05 (2018).

64. The effects of patents are also difficult to determine on a larger scale. For a review of the challenges in assessing patent impacts empirically, see Bronwyn H. Hall & Dietmar Harhoff, *Recent Research on the Economics of Patents* 12–15 (Nat'l Bureau of Econ. Rsch., Working Paper No. 17773, 2012).

65. *See, e.g.*, *infra* notes 93–94 and accompanying text (suggesting that gameplay patents which alleviate technical problems are particularly unlikely to promote innovation).

66. This approach has provided important insights in other contexts. *See, e.g.*, John R. Allison, Mark A. Lemley, Kimberly A. Moore & R. Derek Trunkey, *Valuable Patents*, 92 GEO. L.J. 435, 451 (2004) (suggesting that valuable patents tend to contain more claims, more prior art citations, and more received citations than less valuable patents).

67. Mark A. Lemley, *Software Patents and the Return of Functional Claiming*, 2013 WIS. L. REV. 905, 930 (2013).

tend to be those which are separable from core gameplay and whose usefulness does not depend on technological limitations.

1. The Loading Screen Minigame

In 1995, Namco patented a method of providing "auxiliary games" for users to play while they waited for the main game to load.[68] This method solved a significant problem. In 1994, Sony released the first PlayStation—a gaming console whose graphical capabilities far exceeded its competitors because it used CD-ROMs instead of game cartridges.[69] The disadvantage of this shift, however, was that PlayStation games required the user to wait long periods of time for the console to load the game data from the CD into its own memory.[70] Namco addressed this problem in their 1995 car racing game *Ridge Racer* by first loading the much less memory-intensive 1980s arcade game *Galaxian*, and then allowing users to play *Galaxian* while *Ridge Racer* continued to load.[71] Instead of staring for minutes at a static loading screen, users could immediately play a game.

Despite its apparent value, this patent may have drawn more ill-will from the gaming community than any other. The Electronic Frontier Foundation critiqued the patent for hampering innovation.[72] As Namco was resistant to licensing this patent, commentors speculated that there would be a renaissance of loading screen minigames after its expiration.[73] There was even a programming competition to celebrate the patent expiring.[74]

But much of this optimism proved unfounded. Nearly a decade later, there are few examples of games that have capitalized on the patent since its expiration.[75] And while the patent was active, developers were still able to create a variety of interactive loading screens.[76] Some games, for example, contained loading screens where the user could control their player-character and practice skills involved in the main game.[77]

---

68. U.S. Patent No. 5,718,632 (filed Nov. 27, 1995).

69. *See* Harmon, *supra* note 8 (describing the consequence of Namco's patent as "an unnecessary wastage of time").

70. *See id.*

71. EL GAMER OCHENTERO - GUÍAS RETRO, *Ridge Racer (Playstation) - Galaxian Minigame (HD)* (YouTube, Mar. 4, 2019), https://www.youtube.com/watch?v=3NwttfFV09k [perma.cc/UT2J-269N]; *Ridge Racer*, FANDOM: RIDGE RACER WIKI, https://ridgeracer.fandom.com/wiki/Ridge_Racer [web.archive.org/web/20250918155951/https://ridgeracer.fandom.com/wiki/Ridge_Racer] (last visited July 8, 2025).

72. *See* Harmon, *supra* note 8.

73. Matt Kamen, *Why Video Game Loading Screens Could Soon Be Fun*, WIRED (Dec. 2, 2015), https://www.wired.com/story/namco-patent-ends-allowing-loading-screen-minigames/ [perma.cc/CMM3-LNA8].

74. KaiClavier, *Loading Screen Jam*, ITCH.IO (Dec. 6, 2015), https://itch.io/jam/loading-screen-jam [perma.cc/DMS9-QYZ8].

75. *See* GAMESPOT, *The Patent That Gave Us 20 Years of Loading Screens - The Point*, at 4:20-4:40 (YouTube, Jan. 18, 2015), https://www.youtube.com/watch?v=TU7VuXg0vFg [perma.cc/2P7R-TKMG] (noting this absence).

76. Dan Crawley, *10 Interactive Loading Screens That Actually Don't Suck*, VENTUREBEAT (Oct. 5, 2014), https://venturebeat.com/games/interactive-loading-screens/ [perma.cc/R8JF-NQPE].

77. G. Christopher Williams, *Learning from Loading Screens: The Pedagogy of Bayonetta*, POP MATTERS (Jan. 20, 2010), https://www.popmatters.com/119356-learning-from-loading-screens-the-p

That said, the absence of innovation following this patent's expiration does not mean the patent did not block innovation while it was active. The usefulness of a loading screen minigame is dependent on the primary game having a long enough loading time for the user to play a minigame. If a video game loads quickly enough as to not bore players, or just quickly enough that there is not enough time to play a minigame, then there is little benefit in including a loading screen minigame. Technical advances in gaming hardware have facilitated massive reductions in the loading time of video games.[78] As such, the absence of loading screen minigames following the expiration of Namco's patent does little to discredit claims that the patent hampered innovation and game quality.

Indeed, that the usefulness of Namco's invention expired alongside its patent undermines the main rationale for the existence of the patent system. Patent law has been characterized as the "primary policy tool to promote innovation, encourage the development of new technologies, and increase the fund of human knowledge."[79] The most direct way in which patent law does this is by incentivizing inventors with temporary monopolies—the value of these monopolies is roughly proportional to the value of the invention, allowing the law to incentivize efficient innovation.[80] Proponents argue that while these temporary monopolies can be a significant cost to society, they are ultimately worth the expansion of human knowledge.[81] Once discovered, that new knowledge can be utilized by the inventor, by licensees, or—after the patent's expiration—by the public. However, if usefulness of the new knowledge is itself temporary, especially if that usefulness expires before the associated patent, the patent system's "quid pro quo" provides less benefit to the public. To obtain a patent, applicants are expected to contribute "a measure of worthwhile knowledge to the public storehouse."[82] By 2015, the value of Namco's contribution may have effectively expired.

To be sure, Namco's patent could have still promoted innovation if its underlying invention would not have been discovered but for the patent system. That is, if no one would have developed loading screen minigames without the patent, then the improvement to *Ridge Racer* itself constitutes a moderate benefit and the only actual effect of Namco's patent.

But that possibility appears unlikely. Although it is often difficult to conclusively determine whether a particular invention would have been discovered but for its associated patent, several factors undermine the importance of patent incentives here. First, the concept of a loading screen minigame appears to be

---

edagogy-of-bayonetta-2496154126.html [perma.cc/GFG8-4JNS]; GAMESPOT, *supra* note 75, at 2:50 –3:00.

78. Bryant Francis, *There's a Load Time Arms Race in the Video Game Industry*, GAME DEV. (July 25, 2022), https://www.gamedeveloper.com/game-platforms/there-s-a-load-time-arms-race-in-the-video-game-industry [perma.cc/H9B9-8PH2] (describing the industry's push to reduce load times, including "[t]he advent of near-instantaneous load times").

79. Dan L. Burk & Mark A. Lemley, *Policy Levers in Patent Law*, 89 VA. L. REV. 1575, 1576 –77 (2003).

80. *See* Sachs, *supra* note 63, at 504–05.

81. *See* Jonathan H. Ashtor, *Does Patented Information Promote the Progress of Technology?*, 113 NW. U. L. REV. 943, 948–50 (2019); Rebecca S. Eisenberg, *Patents and the Progress of Science: Exclusive Rights and Experimental Use*, 56 U. CHI. L. REV. 1017, 1022 (1989) (discussing the "'quid pro quo' of the patent monopoly").

82. Application of Argoudelis, 434 F.2d 1390, 1394 (C.C.P.A. 1970) (Baldwin, J., concurring); *see* Eisenberg, *supra* note 81, at 1022.

particularly easy to discover. Certainly, many inventions appear obvious in hindsight,[83] but it is notable that Namco produced a game with their minigame loading screen only a year after the PlayStation increased loading times. Second, the idea of a minigame loading screen was not entirely novel. *Invade-A-Load*, released in 1987, was an arcade-style minigame that users could play while they waited for the main game to load.[84] Other, less-popular loading minigames predate Namco's patent as well.[85] Third, Namco does not seem to have meaningfully operationalized their patent. They do not seem to have licensed it or substantially advertised this advantage over their competitors.[86] If the patent provided limited value to Namco, it is less likely that Namco was highly motivated to acquire it.

Taken together, the low probability that Namco's patent promoted the development of loading screen minigames and the diminishing value of Namco's invention post-expiration compare unfavorably to the societal costs of Namco's limited monopoly. Several minutes of boredom for every user every time that they play a game is not a small cost to the industry and its users. Developers' persistent efforts to find alternatives to minigames underscore this demand.[87] And while companies sometimes acquire patents without the intention to limit competing products,[88] Namco's patent had a discernable impact on other developers. Online sources suggest that the game *Okami*, for example, removed its interactive load screen because of Namco's patent.[89] While their claims appear speculative, it is telling that *Okami's* minigame came back shortly after the Namco patent expired.[90] Of course, by then mini-game loading screens had lost much of their value.[91]

---

83. *See* Dmitry Karshtedt, *Nonobviousness: Before and After*, 106 IOWA L. REV. 1609, 1632 (2021). While I do not refer to § 103 obviousness here, the hindsight bias is similarly applicable.

84. Rich Aplin, *C64 Review – Invade-A-Load!*, LEMON64 (Oct. 19, 2005), https://www.lemon64.com/review/invade-a-load/564 [perma.cc/47QD-DULD]. Some commentors believe that because of *Invade-a-Load*, Namco's patent was not novel and should not have been granted by the USPTO. *See* Harmon, *supra* note 8; *infra* notes 196–201 (discussing the requirements for a patent). Whether or not *Invade-a-Load* anticipates Namco's patent, its existence undermines the need for patents to incentivize inventors in this space. *See* Aplin, *supra* (describing how he invented *Invade-a-Load* "for fun" at age sixteen).

85. SHAROPOLIS, *C64 Invade-a-Load - Classic Game Autopsy*, at 4:50-7:05 (YouTube, Sep. 2, 2017), https://www.youtube.com/watch?v=YUigiY53YCs [perma.cc/SNW8-MMFV] (describing several loading games which predated Namco's patent).

86. Deon du Plessis, *Will Mini-Games Replace Static Loading Screens in 2015?*, HYPERTEXT (Jan. 13, 2015), https://htxt.co.za/2015/01/loading-screens-may-stop-sucking-in-2015/ [perma.cc/LBU8-NHK5].

87. *See supra* notes 76–77.

88. James M. Rice, *The Defensive Patent Playbook*, 30 BERKELEY TECH. L.J. 725, 728–29 (2015).

89. *See, e.g.*, Okami (Game), NAMUWIKI (Nov. 15, 2025), https://en.namu.wiki/w/오오카미(게임) [perma.cc/EXA6-6MAC].

90. *See* Jarrod Johnston, *Okami HD Review*, GAMECRITICS.COM (Dec. 23, 2017), https://gamecritics.com/jarrod-johnston/okami-hd-review/ [perma.cc/5VVV-RXZJ] ("This latest version only features two enhancements, the less notable being the optional return of the PS2 loading screen minigames that were later removed.").

91. *Id.* ("[The mini-games] serve as a novel little distraction, but with loading less of a problem these days, they don't add a lot.").

As such, investigation into Namco's patent appears to substantiate some of the criticisms against it.[92] This investigation also reveals four properties that may indicate when a video gameplay patent is less likely to promote innovation.

First, Namco's patent warns of video gameplay patents whose usefulness will be short-lived. More specifically, it warns of patents that provide a nontechnical solution to a technical problem, especially a technical problem as transient as hardware speeds.[93] This certainly does not account for all video game patents, but those which qualify are more likely to address problems that will not exist for a long period of time. In these cases, the twenty-year patent term favors inventors over the public in the patent system's "quid pro quo."[94]

Second, and relatedly, Namco's patent warns of video gameplay patents that address new problems. Namco's patent addressed a problem that was arguably only one year old. While this is not a troubling in itself, such solutions are more likely to be trivial to discover. While patent law does not consider the difficulty to invent beyond the obviousness threshold, as a policy matter patents tend to lack societal value if they were not necessary to incentivize their associated invention.[95]

Third, Namco's patent warns of the breadth of claims to material outside of the in-game universe. Patenting loading screen games affected all games, as all games had loading screens. Prior scholarship has warned that software innovation is particularly iterative compared to other industries.[96] This increases the likelihood that a small initial innovation would allow a developer to lay claim to an entire genre and prevent or extract rent from the hundreds of improvements that follow. In a similar fashion, by patenting the concept of a loading screen minigame, Namco claimed arcade-style, first-person shooter, and puzzle-based loading screen minigames. Namco claimed thousands of potential minigames, despite never conceiving of many of them. Scholars suggest that the iterative nature of software means that software patents should be construed narrowly to avoid stifling innovation.[97] Namco's patent suggests the same could be true for video gameplay patents.

Fourth, and finally, Namco's patent warns of the incentives to innovate that exist outside of the patent system. Loading screen minigames were developed before *Ridge Racer* without the incentive of acquiring a patent,[98] and Namco does not seem to have meaningfully benefitted from their patent.[99] A major incentive for

92. *See, e.g.*, *supra* notes 72–74 and accompanying text.

93. Chris A. Mack, *Fifty Years of Moore's Law*, 24 IEEE TRANSACTIONS ON SEMICONDUCTOR MANUFACTURING 202, 202 (2011) (describing the consistent, exponential improvement of "minimum cost" components on a computer chip).

94. *See supra* notes 79–82 and accompanying text.

95. *See* Lemley, *supra* note 67, at 936 n.128. *But see* Paul J. Heald, *A Transactions Cost Theory of Patent Law*, 66 OHIO ST. L.J. 473, 475 (2005) (asserting that patent law serves to lower transaction costs relative to a trade secrecy regime); F. Scott Kieff, *Property Rights and Property Rules for Commercializing Inventions*, 85 MINN. L. REV. 697, 715 (2001) (arguing that patent law's grant of property rights facilitates efficient commercialization).

96. Julie E. Cohen & Mark A. Lemley, *Patent Scope and Innovation in the Software Industry*, 89 CALIF. L. REV. 1, 17 (2001); James Hicks, *Do Patents Drive Investment in Software?*, 118 NW. U. L. REV. 1277, 1288 (2024) (arguing that the rapid evolution and iterative improvement which characterizes software development may make patents ill-suited for effectively incentivizing software innovation).

97. Cohen & Lemley, *supra* note 96, at 17.

98. *See supra* notes 84–85 and accompanying text.

99. *See* Plessis, *supra* note 86 and accompanying text.

innovating outside of the patent system is the market reward for improving one's own product. More unique to the video game industry, developers are often driven by their passion to create as well as market incentives. The creator of *Invade-A-Load* developed the loading minigame "for fun."[100] If video game developers are sufficiently motivated by their passion, patents can only hamper creation.

The first two concerns are applicable to any fast-moving, highly-iterative industry[101] and remain important when considering the merits of video game patenting. The fourth concern is more unique to the gaming industry. That game developers' passion provides its own motivation to create is a well-documented, defining characteristic of the industry.[102] If video game patenting is going to increase,[103] Namco's warnings suggest kinds of video gameplay patents that would be best avoided.

2. The Ghost Car

A staple of car racing games is the "racing ghost"—a semi-transparent recording of a previous run for the player to compete against.[104] Games have included ghost recordings of the player, friends, internet strangers, and the developers themselves.[105] The invention of the ghost car has been highly acclaimed for its innovativeness[106] and contribution to the racing genre. These ghosts provide an easy way for players to seamlessly and visually measure their improvement, receive instruction, and compete asynchronously.[107]

The racing ghost originated with Midway's 1989 arcade game *Hard Drivin'*, and a series of related patents.[108] Because of these patents, Midway has been able to license ghost cars to major studios like Sony, Namco, Sega, and Global VR.[109] While

---

100. *See* Aplin, *supra* note 84; *An Interview with Richard Aplin*, TACGR (Sep. 9, 2001), tacgr.emuunlim.com/interviews/richardaplin.html.

101. *See* Cohen & Lemley, *supra* note 96, at 22 (discussing the software industry's speed and iterability).

102. *See, e.g.*, Cassandra Roxburgh, *Corporate Culture Is a Barrier to Labor Organizing in the Video Game Industry*, PRISM (Dec. 27, 2022), https://prismreports.org/2022/12/27/corporate-culture-video-game-labor-organizing/ [perma.cc/BE5Z-XX7T] ("Larger corporations rely on workers' passion for video games and creativity to justify these abusive environments and bolster their profits."); Amanda C. Cote & Brandon C. Harris, *The Cruel Optimism of "Good Crunch": How Game Industry Discourses Perpetuate Unsustainable Labor Practices*, 25 NEW MEDIA & SOC'Y 609, 612 (2021) ("[B]ecause so many people are passionate about development, employees constantly confront the feeling that they are replaceable.").

103. As may be necessitated by the "rising AI-imitation threat." *See infra* Part I.C.

104. *Racing Ghost*, TVTROPES, https://tvtropes.org/pmwiki/pmwiki.php/Main/RacingGhost [perma.cc/WP2R-7G9T] (listing examples); *see also Arcade To iPhone: The History of Gaming Ghost Cars*, RED BULL (July 12, 2016) (on file with the U.C. Irvine L. Rev.) ("Beating a ghost car gives you a tangible feeling of success which you don't get from merely checking your lap times after you've completed a race.").

105. *Racing Ghost*, *supra* note 104.

106. *Racing Game Mechanics: A Complete Guide for Developers*, JUEGO STUDIOS (Dec. 7, 2024), https://www.juegostudio.com/blog/racing-game-mechanics [web.archive.org/web/20250603111542/https://www.juegostudio.com/blog/racing-game-mechanics] ("The ghost car mechanic is a brilliant innovation in racing game design.").

107. *Id.*

108. Kyle Orland, *Hard Drivin', Hard Bargainin': Investigating Midway's 'Ghost Racer' Patent*, GAME DEV. (June 17, 2007), https://www.gamedeveloper.com/business/hard-drivin-hard-bargainin-investigating-midway-s-ghost-racer-patent [perma.cc/DM86-29B9].

109. *Id.*

details on these exchanges are sparse, they appear to have been relatively amicable —Global VR's internal estimate of the ghost patent's value to them was approximately equal to Midway's "pretty reasonable" licensing fee.[110]

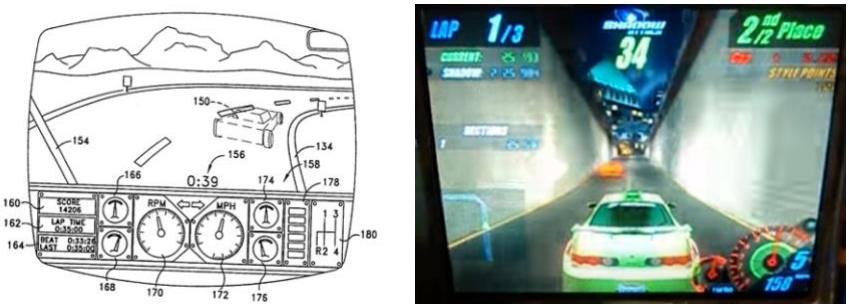

Figure 4: Midway's Ghost Patent and Global VR's Embodiment[111]

From this account, Midway's ghost patent appears to be an example of the patent system working as intended.[112] Midway invented a concept that benefited many racing games and was rewarded a reasonable proportion of its contribution. It is unclear whether the ghost car would not have been invented but for the patent system, but it at least appears that no other developer thought of the ghost car in the sixteen years of racing games that preceded *Hard Drivin'*.[113]

This is not to suggest Midway's patent is immune to criticism. It may be wrong that Midway's 1996 patent exacted rent from competitors for twenty years[114] in an industry that moves so fast that the associated video game became "outdated" after two. Patent scholars have argued that patent term lengths should be shorter in industries with rapid developments,[115] and this argument appears fairly applicable to the video game industry. On the other hand, the ghost car is an ongoing staple of the active genre of racing games.[116] As such, unlike Namco's loading screen patent, the ghost car is of substantial persisting value and so looks much more like the sort of innovation envisioned by the patent system.

As such, Midway's patent provides insight into what might make a video gameplay patent more likely to promote innovation. Namely, it underscores the

110. *Id.*

111. U.S. Patent No. 5,577,913 Fig. 4 (filed Oct. 7, 1994); SUPERMII, *Need for Speed Underground Arcade* (YouTube, July 29, 2015), https://www.youtube.com/watch?v=pt3Cm-Gk0jk [perma.cc/5TV3-APL8].

112. *See supra* notes 79–82 and accompanying text.

113. Coleen Figner, *Racing Games Through the Ages*, SCREEN RANT (Dec. 6, 2022), https://screenrant.com/racing-games-through-ages/ [perma.cc/J8Z8-VU6S].

114. Mozchops, *Mazchops Talk Page*, FANDOM: RE-VOLT WIKI (Aug. 2, 2011), https://revolt.fandom.com/wiki/User_talk:Mozchops [perma.cc/GM4A-AR2E] ("The ghost car was in until someone noticed that Atari held a copyright on 'ghost cars',—so we either had to pay royalties to Atari or come up with something different.").

115. Dan L. Burk & Mark A. Lemley, *Tailoring Patents to Different Industries*, *in* BIOTECHNOLOGY AND SOFTWARE PATENT LAW: A COMPARATIVE REVIEW OF NEW DEVELOPMENTS 9, 10–13 (Emanuela Arezzo & Gustavo Ghidini eds., 2011).

116. Indeed, it is common enough that developers sell premade ghost car assets to other developers. Thomas Bye, *Ghost Recording and Replay Script*, UNITY ASSET STORE (Sep. 29, 2019), https://assetstore.unity.com/packages/tools/integration/ghost-recording-and-replay-script-138922 [perma.cc/RER2-6WFG].

importance of modulability. Competitors seem to view Midway's license as a value-add to their games rather than an unjust rent.[117] A compelling explanation for this is that the ghost car patent is nonessential to the general functioning of most video games. Most implementations of the ghost car use it as a visual addition to a car race that would operate according to the exact same mechanics with or without the ghost car.[118] A powerful concern with patents is that a firm might develop a product, unknowingly infringe on a patent, and be forced to pay an excessive license to avoid losing all that they have already invested in their product.[119] That is, a patent on an essential component of a product can hold that product hostage. This does not mean "essential" patents are bad. Indeed, it may be more important to reward essential patents than nonessential ones. But it does mean that if the essential patent is broader than it should be, the patent owner's ability to stifle their industry is much greater.

Midway's patent is modularizable, which seems related to its efficient pricing. Global VR, for example, was only able to predict the value-add of having ghost cars—and come to a reasonable sum—because the ghost cars were an optional improvement that Global VR's game could do without. This also likely contributed to why Midway's licensing fee was "pretty reasonable"—their potential licensees had a genuine choice regarding the license.[120] They were not being held hostage by their investment thus far in the development of their game.

The patent also reveals a compelling reason why patents may be particularly critical in the video game industry: forced transparency. Trade secrets are often an alternative to patenting.[121] Indeed, one justification for the patent system is that it frees companies from the expense of protecting certain trade secrets.[122] But trade secrets cannot protect most video gameplay innovations. While it may be possible to keep a chemical formula secret, the concept of a ghost car cannot be used in a video game without revealing it to the public. As such, without the patent system, Midway would have had no way to reap the benefits of their genre-shaping innovation.

3. The Medium

In 2016, the studio Bloober filed a patent for a method of allowing players to move and interact within two different environments at the same time.[123] Their

117. Orland, *supra* note 108.

118. *See supra* notes 104–107 and accompanying text.

119. Daniel Lin, *Research Versus Development: Patent Pooling*, *Innovation and Standardization in the Software Industry*, 1 J. MARSHALL REV. INTELL. PROP. L. 274, 277 (2002).

120. Orland, *supra* note 108.

121. David Breiner, *Patents vs. Trade Secrets: What You Should Know*, BROWNWINICK (Apr. 19, 2023), https://www.brownwinick.com/insights/patents-vs.-trade-secrets-what-you-should-know [perma.cc/PD92-CEWA].

122. ROBERT P. MERGES, PETER S. MENELL & MARK A. LEMLEY, INTELLECTUAL PROPERTY IN THE NEW TECHNOLOGICAL AGE 16 (6th ed. 2012); Roberto Mazzoleni & Richard R. Nelson, *Economic Theories About the Benefits and Costs of Patents*, 32 J. ECON. ISSUES 1031, 1032–34 (1998) (describing how patents assist in the transaction of information by allowing license holders to disclose their invention to potential licensees, without giving it away free of charge); *see generally* Mark A. Lemley & Robin Feldman, *Patent Licensing, Technology Transfer, & Innovation*, 106 AM. ECON. REV. 188 (2016).

123. U.S. Patent No. 10,500,488 (filed Mar. 30, 2016); *see also* CJ Melendez, *Xbox Showcase: The Medium Show Off "Patented" Dual-Reality Gameplay*, RELY ON HORROR (July 23, 2020), https://ww

associated game, *The Medium*, was a puzzle horror game where the user played as a psychic whose powers allow her to manipulate the physical world and the spiritual world simultaneously, allowing the player to solve unique puzzles on a split screen.[124]

The use of this patent differs from the ghost car in several ways. While the ghost car is modular—able to be added or removed from racing games without changing the actual mechanics of racing—Bloober's patent was central to *The Medium*'s gameplay.[125] The differences between the two worlds in *The Medium* were not just visual: Players needed to manipulate objects in both worlds in order to progress through the game.[126] Notably, this mechanic was also highly connected to the narrative of the game. While a ghost car could be added to most racing games, a method of allowing a single player to interact with two worlds simultaneously makes particular sense in a game about a psychic who has one foot in the physical world and one in the spiritual.[127]

Figure 5: Embodiment of Bloober Patent[128]

Also unlike the ghost car, Bloober's patent has yet to be licensed or reused.[129] Granted, Bloober's patent has not yet expired, and may by licensed in the future, but its integration with the core gameplay and narrative of *The Medium* makes the patent applicable to a much smaller number of games.

---

w.relyonhorror.com/latest-news/xbox-showcase-the-medium-show-off-patented-dual-world-gameplay/ [perma.cc/XAT6-NBX8].

124. Melendez, *supra* note 123; *see infra* Figure 5.

125. Brianna Reeves, *The Medium Split-Screen Technology Might Stay a Rarity (For Now)*, SCREEN RANT (Feb. 5, 2021), https://screenrant.com/the-medium-split-screen-no-more-plans-bloober/ [perma.cc/CAD3-Z6TJ].

126. Andrew Webster, *The Medium Is Slow-Burning Psychological Horror on the Xbox Series X*, VERGE (Jan. 27, 2021), https://www.theverge.com/22251159/the-medium-game-review-xbox-series-x-pc [web.archive.org/web/20231202055250/https://www.theverge.com/22251159/the-medium-game-review-xbox-series-x-pc] ("[Y]ou'll be swapping between worlds, using magical mirrors and other mystical objects to manipulate the space around you.").

127. *See* Melendez, *supra* note 123.

128. BLOOBER TEAM, *The Medium - Official 14-Minute Gameplay* (YouTube, Jan. 5, 2021), https://www.youtube.com/watch?v=PJi-7Ue_7ms [perma.cc/4N9G-T5LL] (brightness altered for visibility).

129. Reeves, *supra* note 125.

But this lack of licensing may not to suggest that Bloober's patent has been of little value. Rather, this case study demonstrates another well-established use of patents: marketing.[130] That Bloober held a patent for their split-screen mechanic was heavily advertised by Bloober,[131] *The Medium*'s then-exclusive platform Xbox,[132] and a variety of popular gaming blogs.[133]

As such, Bloober's patent seems to be another example of the patent system successfully promoting innovation. First, it appears particularly likely here that the patent system helped promote the creation of the affiliated game's innovative playstyle. The underlying idea of Bloober's patent may have been cheap to create and therefore unnecessary to incentivize. But as a core gameplay mechanic, *The Medium*'s success rested on the viability of a gameplay feature that had never been tested in the market. As industry norms continue to incentivize studios to avoid risk,[134] increased marketability would have helped make *The Medium* appear viable to investors.[135] As Bloober's patent appears to be novel (and not predicated on a recent technological change[136]), this constitutes a meaningful benefit.

In some ways, however, Bloober's patent may pose a larger risk to future innovation than did the ghost car patent. Namely, because split-worlds interaction is rarely going to be separable like ghost cars.[137] As such, if a game inadvertently infringes on Bloober's patent, its developers cannot simply remove the infringing material from their game. Those developers could be forced to choose between a lawsuit, license, or discontinuing their game—allowing Bloober to extract an excessive license by effectively holding the other developer's game hostage.[138]

This issue is compounded by the more abstract nature of Blooper's patent claims. Scholarship has repeatedly warned that software patents tend to be particularly abstract compared to other industries, hurting innovation by creating patents that (1) force competitors to give the patents an excessively wide breadth to avoid infringement, and (2) claim a broad array of innovations that the patent owner never conceived of or disclosed.[139]

---

130. Ted Sichelman, *Commercializing Patents*, 62 STAN. L. REV. 341, 352 (2010).

131. *See, e.g.*, *The Medium*, BLOOBER, https://www.blooberteam.com/the-medium [perma.cc/TXG8-JV7K] (last visited July 8, 2025) (touting *The Medium*'s "[n]ever-seen-before and officially patented gameplay").

132. *See, e.g.*, Jacek Zięba, *The Power Behind The Medium's Dual Reality Gameplay*, XBOX WIRE (Jan. 28, 2021), https://news.xbox.com/en-us/2021/01/28/the-mediums-dual-reality-gameplay/ [perma.cc/9V9S-X3BJ].

133. *See, e.g.*, Andy Robinson, *Xbox Series X Exclusive The Medium Shows 'Patented' Dual-Reality Gameplay*, VIDEO GAME NEWS (July 23, 2020), https://www.videogameschronicle.com/news/xbox-series-x-exclusive-the-medium-shows-patented-dual-reality-gameplay/ [web.archive.org/web/20250420221410/https://www.videogameschronicle.com/news/xbox-series-x-exclusive-the-med ium-shows-patented-dual-reality-gameplay/]; Melendez, *supra* note 123.

134. *See infra* notes 148, 153–157 and accompanying text. While Bloober's downside risk was not as high as many titles, its budget was still in the millions. Ekaterina Bespyatova, *The Medium Has Recouped the Marketing and Development Costs for the First Day of Sales*, APP-2-TOP (Jan. 2, 2021), https://app2top.com/games-2/the-medium-has-recouped-the-marketing-and-development-costs-for-the-first-da y-of-sales-180851.html [perma.cc/53UX-6C6R].

135. *See* Zięba, *supra* note 132.

136. *See supra* notes 93–95 and accompanying text.

137. *See supra* notes 125–127 and accompanying text.

138. In contrast, see notes 117–119 and accompanying text above.

139. *See* Lemley, *supra* note 67, at 930–31 ("Unlike chemistry and biotechnology, where we have a clear scientific language for delineating what a patent claim does and doesn't cover, there is no

These critiques appear applicable to Blooper's patent as well. First, while the ghost car patent claims a specific "simulated vehicle" and its "recorded course path,"[140] the Blooper patent's method of "simultaneous playing" in a "separate story universe"[141] could apply to games in a variety of genres, making it harder for developers to know of Blooper's patent and properly avoid infringing it. Second, simultaneous playing could lend itself to a variety of different puzzles and auxiliary mechanisms.

All of that said, there is currently little evidence that these theoretical harms from Blooper's patent have actually occurred, and Bloober spokespeople claim to be uninterested in aggressively pursuing infringers.[142] Given *The Medium*'s advertising and novelty, Bloober's patent, on net, appears to have plausibly furthered the patent system's goal of "promot[ing] Progress."[143]

C. The Rising AI-Imitation Threat

While specific video gameplay patents have certainly impacted the industry,[144] Part I.A suggests that gameplay development occurs in a relatively negative patent space.[145] Yet developers continue to make substantial investments into their products—with some major games touting budgets in the hundreds of millions.[146] These developers operate with relatively little copyright, trademark, or trade dress protections as well.[147] Yet they are able to sufficiently distinguish their games from imitators in order to make hundreds of millions of dollars of investment worthwhile.

Recent scholarship suggests that big-budget "AAA" game developers distinguish their products by increasingly dedicating resources towards "copy-resistant" game aspects like "graphics, celebrity involvement, full voice

---

standard language for software patents. Accordingly, no one can really know what a software patent covers until the court has construed the language of the patent claims."); Kevin Emerson Collins, *Patent Law's Functionality Malfunction and the Problem of Overbroad, Functional Software Patents*, 90 WASH. U. L. REV. 1399, 1401 (2013).

140. U.S. Patent No. 5,577,913 Fig. 4 (filed Oct. 7, 1994).

141. U.S. Patent No. 10,500,488 (filed Mar. 30, 2016).

142. Bloober Team, *AMA: We are Bloober Team - the Developers of The Medium. Ask Us Any thing!*, REDDIT (2021), https://www.reddit.com/r/Games/comments/lcjygr/ama_we_are_bloober_team_the_developers_of_the/ [perma.cc/3JZE-NWHJ] ("The company decided to patent the method as a protective measure . . . . We don't want to sue anyone.").

143. U.S. CONST. art. I, § 8, cl. 8.

144. *See supra* Part I.B.

145. *See supra* notes 54–55 and accompanying text.

146. Amelia Zollner, *Major Publishers Report AAA Franchises Can Cost Over a Billion to Make*, IGN (Apr. 28, 2023), https://www.ign.com/articles/major-publishers-report-aaa-franchises-can-cost-over-a-billion-to-make [perma.cc/FTP2-NR3S] ("We [Activision] have to make so much content for Call of Duty that we can't even lean on one lead studio anymore. . . . Now we need almost 1.5 lead studios for each annual CoD.") (quotations omitted); Dean Takahashi, *Shawn Layden Interview: The Man with the Crash Bandicoot T-shirt*, VENTUREBEAT (June 19, 2025), https://gamesbeat.com/shawn-layden-interview-the-man-with-the-crash-bandicoot-t-shirt/ ("Major triple-A games in the current generation go anywhere from $80 million to $150 million or more to build, and that's before marketing."); *How Much Does Indie Game Development Cost in 2024?*, *supra* note 57 (reporting that marketing and promotional activities often constitutes 25 percent to 50 percent of a game's budget).

147. *See* Ard, *supra* note 18, at 1292 ("[K]ey game elements lack IP protection. . . . Game developers therefore require strategies beyond IP to compete with those who would copy their works.").

acting, and open worlds."[148] These aspects deter imitators because their cost is in their implementation. A ghost car might be challenging to originally ideate, but it is cheap for imitators to copy—as tends to be the case for gameplay innovations.[149] In contrast, recreating over forty miles of Ancient Greece[150] is painstaking every time. So, while a competitor could decide to create a similarly sprawling world, they would be forced to make the same upfront investment and benefit little from copying the original. As such, by focusing on investments which do not advantage their competitors, AAA game developers can compete with relatively few intellectual property protections[151]—albeit at an inefficiently low level of gameplay innovation.[152]

Scholarship also warns that this emphasis on copy-resistance creates a "feedback loop."[153] Developers are forced to distinguish their games by focusing on expensive features because those features are equally expensive to copy. This makes games increasingly expensive to develop, which lowers studios' willingness to tolerate risk. And innovative gameplay carries more risk. After twenty-four profitable *Call of Duty* games with the same underlying gameplay, the twenty-fifth in the series is likely to turn a profit.[154] The profitability of a novel game is far less assured.[155] When the average AAA studio's game costs between sixty and eighty million dollars to create,[156] investors demand certainty that there is an audience for upcoming games. High-budget games entrench the high-budget model as studios turn away from unproven gameplay and more into high-budget assets.[157]

This is not to suggest that the video game industry is bereft of innovation. Smaller studios fill this niche, but struggle with imitators.[158] The game *Auto Chess*

148. *Id.* at 1350 ("Blockbuster games now cost upward of $100 million to develop and market due to investment in features like graphics, celebrity involvement, full voice acting, and open worlds.").

149. *E.g.*, *infra* notes 158–161 and accompanying text. For a more comprehensive treatment of the free-rider problem and its relationship to intellectual property law, see William M. Landes & Richard A. Posner, *An Economic Analysis of Copyright Law*, 18 J. LEGAL STUD. 325, 326 (1989).

150. Matt Ryan, *Which Assassin's Creed Games Actually Have the Biggest Maps*, SCREEN RANT (Sep. 7, 2022), https://screenrant.com/assassins-creed-biggest-maps-compared-origins-odyssey-valhalla/ [perma.cc/4Y2S-ECKY] (reporting that *Assassin's Creed Odyssey* contains roughly forty-five miles of traversable land—over ninety miles including the sea).

151. *See also* David Friedman, *Standards as Intellectual Property: An Economic Approach*, 19 U. DAYTON L. REV. 1109, 1116 (1994) (explaining how legal protection becomes less critical when the costs of free riding approach the costs of original creation).

152. *See* Ard, *supra* note 18, at 1359, 1369; *see also* Cole, *supra* note 60 ("There's been a trend of indolence throughout the past few years in the gaming industry."); Obedkov, *supra* note 60 (arguing that large companies "don't want to invest in new IP and innovate").

153. *See* Ard, *supra* note 18, at 1355–56.

154. Nathan Warby, *All Call of Duty Games in Release Order*, DEXERTO (Jan. 16, 2025), https://www.dexerto.com/call-of-duty/every-call-of-duty-game-in-order-1906369/ [perma.cc/CSR7-SQSQ].

155. Innovative gameplay can also require considerable trial-and-error before it is ready for the market. *See* Eren Erdoğan, *Unlocking Creativity: Crafting Innovative Game Mechanics*, MEDIUM (July 7, 2023), https://medium.com/@imerenerdogan/unlocking-creativity-crafting-innovative-game-mechanics-6b550e465a86 [perma.cc/YY6H-A8CC] (exploring the importance of iteration and "extensive playtesting" when developing novel game mechanics).

156. Anastasia, *The Rising Costs of AAA Game Development*, EJAW GAME DEV. STUDIO (Sep. 25, 2023), https://ejaw.net/the-rising-costs-of-aaa-game-development/ [perma.cc/A9T3-P2SA].

157. *See* Ard, *supra* note 18, at 1355 ("One way to increase that likelihood is to create sequels for games that sold well in the past—if the seventeenth installment of *Call of Duty* sold twenty million copies, it is a good bet that the nineteenth installment will also sell.").

158. *See* Ard, *supra* note 18, at 1356–63.

was praised for its "entirely unique" style of gameplay, but users quickly abandoned the game in favor of clones.[159] *Donut County* suffered a similar fate when its gameplay was copied by *Hole.io*.[160] As did *Threes* when its gameplay was copied by *2048*.[161] While indie developers have some protection by simply making games that are "less popular and therefore less profitable to copy,"[162] this small conciliation is incongruent with our expectations for a sophisticated, multi-billion dollar business. Nevertheless, often not entirely profit-motivated,[163] indie developers continue to innovate as much as they can, given the economic challenges they face.[164]

Taken together, studios can distinguish their games without intellectual property protections, but they face strong incentives to increasingly deemphasize innovative gameplay. This results in an inefficient market, which may be reflected by the abundance of criticisms regarding the lack of creativity in video games.[165] While the arrangement is not ideal, it at least allows for AAA studios to distinguish their games and for creative ideas to have an outlet (so long as they do not become too profitable).

But the collapse of this arrangement may be imminent. Improvements in AI promise to substantially ease the development of otherwise copy-resistant assets such as high-definition graphics,[166] voice acting,[167] and open worlds.[168] The

159. *See* Faustina, *supra* note 15, at 39–40.

160. Ryan Lambie, *The Strange and Complex World of Patented Game Mechanics*, FILM STORIES (Sep. 11, 2023), https://filmstories.co.uk/features/the-strange-and-complex-world-of-patented-game-mechanics/ [perma.cc/HE6F-LRQN]; Michael Futter, *Goldman Sachs-Backed Cloner Uses War Chest, Ad Buys to Overshadow Original Games*, VARIETY (July 6, 2018), https://variety.com/2018/gaming/features/donut-county-hole-io-apple-1202866615/ [web.archive.org/web/20250506154200/https://variety.com/2018/gaming/features/donut-county-hole-io-apple-1202866615/].

161. Dean Takahashi, *Threes vs. 2048: When Rip-Offs Do Better than the Original Game*, VENTUREBEAT (Mar. 30, 2014), https://venturebeat.com/games/threes-vs-2048-when-rip-offs-do-better-than-the-original-game/ [perma.cc/2K5D-FM3E].

162. Ard, *supra* note 18, at 1359.

163. *Id.*

164. Rita Hou, *Funding Challenges Escalate for Indie Game Developers*, 80LV (Mar. 29, 2024), https://80.lv/articles/funding-challenges-escalate-for-indie-game-developers/ [perma.cc/TMZ7-2CGM].

165. *See, e.g.*, Cecilia D'Anastasio, *Leaders Lament Lost Creativity at Game Developers Show*, BLOOMBERG (Mar. 22, 2024), https://www.bloomberg.com/news/articles/2024-03-22/video-game-executives-lament-lost-creativity-at-developer-s-show [perma.cc/QG6A-WF9N]; Dominik Bošnjak, *Former PlayStation Exec Sees a 'Collapse of Creativity' in Modern Games*, GAME RANT (Oct. 19, 2024), https://gamerant.com/playstation-boss-modern-games-lack-creativity-risk-why-comments/ [perma.cc/H7RY-KSMP]; Jade King, *Modern Gaming Is a Creatively Bankrupt Nightmare*, THEGAMER (Jun. 13, 2022), https://www.thegamer.com/modern-gaming-creatively-bankrupt-remakes-remasters/ [perma.cc/GP5U-G8M2]; Scott Deakin, *Darksiders and The Lack of Creativity in Gaming*, VENTUREBEAT (Apr. 7, 2011), https://venturebeat.com/community/2011/04/07/darksiders-and-the-lack-of-creativity-in-gaming/ [perma.cc/334C-XX37].

166. *How AI Is Making Video Games More Fun and Immersive*, MICROSOFT (Aug. 30, 2024), https://www.microsoft.com/en-us/edge/learning-center/ai-making-video-games-fun-immersive?form=MA13I2 [perma.cc/MS2P-AHUE].

167. *Voice Actors Have Mixed Responses to AI Clones of Their Voices*, FOX61 (Feb. 20, 2024), https://www.fox61.com/article/news/nation-world/voice-actors-video-games-ai/507-34a4d807-4e65-4562-bd03-8e8c93a37a4d [perma.cc/33NF-YJLM].

168. Sankalp Singh Yadav & Sambath Kumar S., *Study on Generative AI in Game Development: A Survey*, 5 INT'L J. RSCH. PUBL'N & REVS. 2628 (2024); Marie Dealessandri, *Scenario Raises $6m Ahead of AI-Powered Art Engine Early Access*, GAMESINDUSTRY.BIZ (Jan. 19, 2023), https://www.gamesindustry.biz/scenario-raises-6m-ahead-of-ai-powered-art-engine-early-access [perma.cc/5HL2-US78]; KINCSŐ IZSAK, APOLLINE TERRIER, STEPHAN KREUTZER, THORBEN STRÄHLE, CONOR ROCHE, MARTA MORETTO, STIG YDING SORENSEN, MALENE HARTUNG, KRISTINA KNAVING,

increased importance of AI will result in more AI patents,[169] but it will also decrease the copy resistance afforded by video game aspects which large studios have relied upon for years.[170]

AAA studios are likely to respond by seeking to differentiate their games in other ways. Some commentators predict that incoming AI tools will increase developers' focus on video gameplay and make video gameplay become more of what distinguishes games for users.[171] To the degree that this occurs, courts will likely be asked to contend with unanswered questions regarding the protectability of such creations.[172] But innovative video gameplay has historically been a poor investment and easily cloned.[173] Absent changes to the protectability of video gameplay,[174] large studios are poised to differentiate themselves by investing more heavily into marketing, third-party licensing, leveraging trademarks, and games with network effects. Many of these investments do not improve the quality of a game, but they are the outlets large studios are familiar with.[175] To the extent the fully internalized value of better gameplay would be higher, this shift is a market failure.

To be sure, cheaper asset generation has substantial upside. Most directly, it will make more games have better assets. AI tools could also offer a welcome counterweight to ever-expanding development costs[176] and AAA price tags.[177] On game quality, AI tools could encourage differentiation though better storylines and decreasing studio aversion to stories with political or cultural controversy.[178] But, as AI tools make it easier to create games with high-quality assets, they also increase the number of such games and reduce the odds of any particular game becoming a "hit." Depending on whether high-quality narratives can reliably return on their

---

MARLENE A. JOHANSSON, MAGNUS ERICSSON & DAVID TOMCHAK, OPPORTUNITIES AND CHALLENGES OF AI TECHNOLOGIES FOR THE CULTURAL AND CREATURE SECTORS 200–01 (discussing AI's potential to make more realistic NPC and procedurally-generated levels); Shannon Liao, *A.I. May Help Design Your Favorite Video Game Character*, N.Y. TIMES (May 22, 2023), https://www.nytimes.com/2023/05/22/arts/blizzard-diffusion-ai-video-games.html [perma.cc/98U7-9A5Z].

169. *See, e.g.*, U.S. Patent No. 11,494,875 (filed Mar. 30, 2020) (using AI to upscale the output resolution); U.S. Patent No. 11,383,167 (filed Dec. 04, 2020) (using AI to help users complete challenging tasks); U.S. Patent No. 11,344,808 (filed Jun. 26, 2020) (using AI to generate and modify music based on gameplay).

170. *See* Bernard Marr, *The Role of Generative AI in Video Game Development*, FORBES (Apr. 18, 2024), https://www.forbes.com/sites/bernardmarr/2024/04/18/the-role-of-generative-ai-in-video-game-development/ [perma.cc/2AYT-X96Z].

171. Enrico Bonadio & Alina Trapova, *Intellectual Property Law in Gaming and Artificial Intelligence*, *in* HANDBOOK ON PROPERTY LAW & THEORY (2023).

172. For an answer to some of these questions, see Part III.

173. *See, e.g.*, *supra* notes 158–161 and accompanying text.

174. *See infra* Part III.

175. *See* Ard, *supra* note 18, at 1351–55 (describing how AAA studios already differentiate themselves though trademarks, third-party licensing, and network effects).

176. Chris Scullion, *Ex-PlayStation Boss Says Games Should Be Shorter Because Development Costs Are 'Not Sustainable'*, VIDEO GAME NEWS (Dec. 4, 2024), https://www.videogameschronicle.com/news/ex-playstation-boss-says-games-should-be-shorter-because-development-costs-are-not-sustainable/ [perma.cc/4596-45F6].

177. Stacey Henley, *Games Are Too Expensive These Days, For Everyone*, THEGAMER (May 1, 2023), https://www.thegamer.com/video-games-too-expensive-make-develop-buy/ [perma.cc/M7MC-DK4P].

178. Ard, *supra* note 18, at 1355–56 (discussing how large budgets discourage studios from creating controversial stories, such as those involving police misconduct and brutality).

investment, the positive effects of AI tools may be largely limited to cost and quantity.

For indie games, the rise of AI development tools is likely to mean more of the same problem. Small developers rely less on copy-resistant game assets[179] and already struggle with cheap knockoffs.[180] AI tools, then, largely threaten to make cheap knockoffs more prevalent, faster to produce, and more visually impressive.

These effects are not inevitable. But for AI to increase the importance of AAA and indie gameplay,[181] developers need to be able to benefit from their gameplay innovations.

II. PATENTS IN THE COURTS

As explored above, the video game industry generates relatively few gameplay patents. Some of these patents appear to demonstrate the patent system working as intended, while others legitimize the community's fervent opposition. But regardless of the optimality of the industry's low-patent equilibrium thus far, as AI causes video games to lose their copy resistance, the importance of video gameplay patents appears liable to increase.

Scholarship attributes the industry's relatively low patenting rate, in part, to the difficulty in establishing video game innovations as patentable subject matter.[182] Patentability has not always been viewed as such a barrier. In *Diamond v. Chakrabarty*, the Supreme Court stated that Congress intended patent law to encompass "anything under the sun that is made by man."[183] Lawyers took *Chakrabarty* to give them wide latitude in pursuing video game patents.[184] But since then, the Court has since dramatically narrowed the scope of patentability.[185] Abstract ideas have always been unpatentable. But in *Alice Corp. v. CLS Bank Int'l*, the Supreme Court held that merely implementing an abstract idea on a computer is insufficient to transform that abstract idea into patentable subject matter.[186] Since then, the Federal Circuit has distinguished unpatentable claims from those which improve the functioning of a computer,[187] but technical solutions are not the only way to survive *Alice*.

---

179. *But see* @torahhorse, X (Jun. 25, 2018), https://x.com/torahhorse/status/1011288518432157696 [perma.cc/C758-CXM4] ("I spent the last five years crafting Donut County's unique charm, sense of humor, and painstakingly handmade levels. You can't really rip that stuff off imo.").

180. *See supra* notes 158–161 and accompanying text.

181. *See* Bonadio & Trapova, *supra* note 171 and accompanying text.

182. Ard, *supra* note 18, at 1333–34.

183. Diamond v. Chakrabarty, 447 U.S. 303, 309 (1980) (first quoting S. REP. NO. 82-1979, at 5 (1952); then quoting H.R. Rep. No. 82-1923, at 6 (1952)); *see also* Mark A. Lemley & Samantha Zyontz, *Does Alice Target Patent Trolls*, 18 J. EMPIRICAL LEGAL STUDS. 47, 49 (2021) ("In 1998, the Federal Circuit effectively did away with patentable subject matter limitations . . . ."). *Contra* Gottschalk v. Benson, 409 U.S. 63, 71 (1972) (reversing the patentability of claims which would "wholly pre-empt the [implicated] mathematical formula and in practical effect would be a patent on the algorithm itself").

184. *See, e.g.*, Ross Dannenberg & Steve Chang, *It's Just a Game, Right? Top Mythconceptions on Patent Protection of Video Games*, GAME DEVELOPER (May 30, 2005), https://www.gamedeveloper.com/business/it-s-just-a-game-right-top-mythconceptions-on-patent-protection-of-video-games.

185. *See* Ass'n for Molecular Pathology v. Myriad Genetics, 569 U.S. 576 (2013); Mayo Collaborative Servs. LLC v. Prometheus Labs., Inc., 566 U.S. 66 (2012); Bilski v. Kappos, 561 U.S. 593 (2010), Alice Corp. v. CLS Bank Int'l, 573 U.S. 208 (2014).

186. *Alice Corp.*, 573 U.S. at 216 (quoting Ass'n for Molecular Pathology v. Myriad Genetics, Inc., 569 U.S. 576, 589 (2013)).

187. *Patent Subject Matter Eligibility*, USPTO.GOV, https://www.uspto.gov/web/offices/pac/mpep/s2106.html [perma.cc/P2RL-A7M2] (last visited Jan. 16, 2026).

A useful foil here is the patentability of traditional, physical games. While the rules of such games are generally unpatentable, this changes if those rules are associated with a meaningfully novel physical apparatus. In contrast, while courts rarely address video gameplay, the Federal Circuit has repeatedly held that general video game patents must contain a technological solution to be legitimate.[188]

A. Software

The origins of patent law can be traced back to the U.S. Constitution, which grants Congress the power to "promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries."[189] Using this power, Congress has established patents, a form of intellectual property that gives the holder "the right to exclude others from making, using, offering for sale, or selling the invention."[190]

This exclusive right is designed to encourage innovation by offering a temporary monopoly in return for publicly disclosing the details of the invention.[191] By safeguarding the inventor's interests while also granting the public access to new knowledge, the patent system seeks to strike a balance between promoting innovation and ensuring the widespread sharing of information for the benefit of society.[192]

Patents generally confer stronger rights than other kinds of intellectual property. Copyright infringement, for example, requires actual copying, whereas an inventor can be liable for patent infringement without having ever seen or known about the infringed patent.[193]

In turn, patents are generally harder to acquire than other forms of intellectual property protection. Copyright protections are automatically granted to any composition of original expression so long as it is fixed in a tangible medium.[194] Patents, in contrast, are gatekept by arduous practical and doctrinal requirements. On average, acquiring a patent costs $20,000 and may not issue for years.[195] Patent doctrine limits protection to inventions that are novel,[196] nonobvious,[197] and of patent eligible subject matter.[198] The novelty requirement stipulates that the

188. *See supra* Part II.C.

189. U.S. CONST. art. I, § 8, cl. 8.

190. 35 U.S.C. § 154(a)(1). The statutory term for patent protection lasts for twenty years from the application filing date. *Id.* § 154(a)(2).

191. Pooja Krishnan, *Between Scylla and Charybdis: Addressing Software Patent Eligibility in Early-Stage Litigation*, 92 FORDHAM L. REV. 287, 291 (2023).

192. *Id.*

193. Feist Publ'ns, Inc., v Rural Tel. Serv. Co., Inc., 499 U.S. 340, 345–46 (1991).

194. 17 U.S.C. § 102(a) (requiring only that the copyrighted material contains some original expression and is fixed in a tangible medium). *Contra* Larissa Bersh, *An Exceptional Formality Under Berne: Evasion of Copyright Protection via the EU's Text and Data Mining Exception*, 38 HARV. J.L. TECH. 337 (2024) (describing a recent exception to the automatic granting of copyright).

195. David Fagundes & Jonathan S. Masur, *Costly Intellectual Property*, 65 VAND. L. REV. 677, 689–90 (2012); USPTO, PERFORMANCE AND ACCOUNTABILITY REPORT: FISCAL YEAR 2020 60–61 (2020) (reporting a roughly twenty-three month average pendency, not including request for continued examinations and other delays).

196. 35 U.S.C. § 102 (2018).

197. *Id.* § 103.

198. *See id.* § 101. Note that these are not the only requirements. *See id.* § 112(a) (containing the enablement, written description, and best mode requirements).

invention cannot have been previously patented or publicly disclosed.[199] The nonobvious requirement specifies that that the invention must not be obvious to a person skilled in the relevant field.[200] The scope of the patent eligibility requirement—more specifically, its bar on the patentability of "abstract ideas"—has been substantially changed by a series of Supreme Court decisions.[201]

Across these changes, abstract ideas exception has consistently aimed to prevent the monopolization of basic concepts, without which the public would lose access to sweeping categories of embodiments.[202] It is challenging, however, to unravel what is an abstract idea in a software program and what is not. Programmers conceptualize different sections of their own code as operating at different levels of abstraction.[203] Software errors can be conceptualized across multiple levels of abstraction.[204] Thus, when computer programs first emerged, some proposed a categorical exclusion of software from patent eligibility.[205]

It is now well-settled law that not all improvements to software are abstract ideas.[206] But concerns over the contours of software patently eligibly remain. In *Mayo Collaborative Services v. Prometheus Laboratories Inc.*[207] and *Alice Corp. v. CLS Bank Int'l*,[208] the Supreme Court set out a two-step test for patent eligibility.[209] First, a court must determine whether the claims are directed to a patent-ineligible concept, such as abstract ideas.[210] Second, if the claims are directed to a patent-ineligible concept, the court must determine whether the elements of each claim "transform the nature of the claim" into a patent-eligible matter.[211]

---

199. 35 U.S.C. § 102.

200. *Id.* § 103.

201. *See, e.g.*, Mayo Collaborative Servs. v. Prometheus Lab'ys, Inc., 566 U.S. 66 (2012); Alice Corp. Pty. v. CLS Bank Int'l, 573 U.S. 208 (2014).

202. *See* Krishnan, *supra* note 191, at 297.

203. *See* DAVID EVANS, INTRODUCTION TO COMPUTING: EXPLORATIONS IN LANGUAGE, LOGIC, AND MACHINES 38 (2011); Mohsen Dorodchi, Nasrin Dehbozogri, Mohammadali Fallahian, & Seyedamin Pouriyeh, *Teaching Software Engineering Using Abstraction Through Modeling*, 20 INFORMATICS EDUC. 515, 520–21 (2021).

204. Gregory D. Schwartz, *When Disciplines Disagree: The Admissibility of Computer-Generated Forensic Evidence in the Criminal Justice System*, 72 UCLA L. REV. DISCOURSE 174, 184–86 (2024).

205. *See* STAFF OF S. COMM. ON THE JUDICIARY, 90TH CONG., REP. ON THE PRESIDENT'S COMM'N ON THE PATENT SYS. 20 (Comm. Print 1966).

206. *See* Cohen & Lemley, *supra* note 96, at 4 (describing, in 2001, it as a question "for the history books").

207. Mayo Collaborative Servs. LLC v. Prometheus Lab'ys, Inc., 566 U.S. 66 (2012).

208. Alice Corp. v. CLS Bank Int'l, 573 U.S. 208 (2014).

209. *Mayo Collaborative Servs.* 566 U.S. 66. For a discussion of the Supreme Court's earlier decisions on the patentability of computer programs, see Krishnan, note 191 above at 297–301. These decisions were also often motivated by concerns of the abstraction in software patents. *See, e.g.*, Gottschalk v. Benson, 409 U.S. 63, 68 (1972) (deeming a patent ineligible because its claims were "so abstract and sweeping as to cover both known and unknown uses").

210. *Alice Corp.*, 573 U.S. at 218 ("We must first determine whether the claims at issue are directed to a patent-ineligible concept.").

211. *Id.* at 217 ("To answer that question, we consider the elements of each claim both individually and 'as an ordered combination' to determine whether the additional elements 'transform the nature of the claim' into a patent-eligible application." (quoting *Mayo Collaborative Servs.*, 566 U.S. at 79, 78)).

However, the Court did not provide guidance on what makes something abstract.[212] What is an abstract idea, and when an inventive concept is sufficient to transform an abstract idea into patentable subject matter, was left to the Federal Circuit and district courts.[213]

In software, an inventive concept typically must improve computer functionality, such as enabling previously unavailable computations, speeding up existing processes, or reducing the resources required to execute a task.[214] This requirement increased the scrutiny applied to software patents,[215] and encouraged courts to look for "technical solutions" that overcome "technical problems."[216] Of course, not all patents are technical. Many nontechnical industries, such as the board game industry, continue to rely on the patent system by satisfying *Alice* in other ways.

B. Physical Games

Many board games have satisfied the patentable subject matter requirement, such as Monopoly,[217] Life,[218] Sorry!,[219] and Scrabble.[220] As have games with novel playing surfaces like Jenga[221] and novel game parts such as non-cuboid dice[222] or miniature figures.[223] But, despite the breadth of these examples, patenting traditional games is generally a challenging endeavor. The novelty and nonobvious inquiries are difficult to satisfy,[224] and current jurisprudence establishes strict limits on patentable subject matter.

Tabletop games struggle under the *Alice* test because the Federal Circuit has held that game rules are an abstract idea. In *In re Smith*, the Federal Circuit affirmed the rejection of the method of playing with physical, standard playing cards.[225] In

212. *Alice Corp*., 573 U.S. at 221 (noting that "we need not labor to delimit the precise contours of the 'abstract ideas' category").

213. Ognjen Zivojnovic, *Patentable Subject Matter After* Alice*—Distinguishing Narrow Software Patents from Overly Broad Business Method Patents*, 30 BERKELEY TECH. L.J. 807, 845 (2015) ("Since *Alice*, courts and commentators have also taken divergent approaches to step two of the *Alice* framework.").

214. *See* CosmoKey Sols. GmbH & Co. KG v. Duo Sec. LLC, 15 F.4th 1091, 1097 (Fed. Cir. 2021); Uniloc USA, Inc. v. LG Elecs. USA, Inc., 957 F.3d 1303 (Fed. Cir. 2020).

215. *See* Lemley & Zyontz, *supra* note 183, at 65–68.

216. *See, e.g.*, Realtime Data LLC v. Array Networks Inc., 537 F. Supp. 3d 591, 616 (D. Del. 2021), *aff'd*, No. 2021-2251, 2023 WL 4924814 (Fed. Cir. Aug. 2, 2023) ("[Defendant's] principal argument is that the asserted patents are not directed to an abstract idea, because they 'provide particular technological solutions to overcome technological problems' . . . . But the patents do not provide technological solutions.").

217. U.S. Patent No. 2,026,082 (filed Aug. 31, 1935).

218. U.S. Patent No. 53,561 (filed Mar. 30, 1866).

219. U.S. Patent No. 1,903,661 (filed Aug 4, 1930).

220. U.S. Patent No. 2,752,158 (filed Oct. 28, 1954).

221. U.S. Patent No. 5,611,544 (filed Nov. 27, 1995).

222. U.S. Patent No. 3,208,754 (filed Feb. 20, 1963).

223. U.S. Patent No. 6,659,463 (filed July 3, 2002). For a more in-depth discussion of traditional game patents, see Christopher B. Seaman & Thuan Tran, *Intellectual Property and Tabletop Games*, 107 IOWA L. REV. 1615, 1642–44 (2022).

224. *See* Seaman & Tran, *supra* note 223, at 1645.

225. *In re* Smith, 815 F.3d 816, 820 (Fed. Cir. 2016) (affirming USPTO's rejection of claims for a method of playing a wagering game using a standard deck of playing cards). The patent at issue originally covered digital and real playing cards, but only the eligibility of the physical game was appealed.

step one, the court concluded that the applicants' claimed method of conducting a wagering game is drawn to an abstract idea much like *Alice*'s method of exchanging financial obligations and *Bilski*'s method of hedging risk.[226] In step two, it held that the abstract rules for the game contained "purely conventional" activities that could not transform the claimed subject matter into a patent-eligible application of the abstract idea.[227] However, the court noted in dicta that claims directed to conducting a game using a new or original deck of cards could potentially survive step two of *Alice*,[228] and specifically highlighted the USPTO's agreement.[229]

Similarly, in *In re Marco Guldenaar Holding B.V.*, the Federal Circuit reviewed a method of playing a dice game with a novel dice that only has particular faces marked.[230] The court found *In re Smith* was highly instructive, holding the matter at issue unpatentable because, while the markings on the dice were unconventional, they did not give the dice new functionality.[231] That is, the function of the novel markings could be performed by conventional marking, unlike in *In re Miller* where the markings on the side of a cup created a specialized measuring cup with new functionality.[232] In its rationale and discussion of prior cases, *In re Marco* reaffirms the dicta from *In re Smith* and outlines the contours of when and how meaningfully novel game pieces can transform abstract rules into patentability subject matter.

As such, to be patentable, board game mechanics likely need to involve new and nonobvious physical game pieces.[233] These pieces must be unconventional in such a way that the associated abstract rules could not otherwise function.[234] This requirement does not exist only in the functional-relation exception to the printed matter doctrine, but also in physical apparatuses more generally.[235] By tying game rules to concrete, physical objects, it creates some patent protection for board gameplay, while ensuring that broad claims to generalizable abstract rules do not plague the industry.

---

226. *Id.* at 818–19.

227. *Id.* at 819.

228. *Id.*

229. *Id.* (citing Oral Argument at 14:59–15:31, *available at* https://cafc.uscourts.gov/home/oral-argument/listen-to-oral-arguments/ [perma.cc/H393-NMSN] (appeal number 15-1664) ("[T]he agency would apply the *Alice* Test, and so it would say that [any set of rules for a game] is an abstract idea. . . . But the second step, whether or not there is something in the claim . . . that has an inventive concept, I think something like Skip-Bo or Uno at the time they were invented might well meet that test and might escape from the *Alice* test in in that sense.").

230. *In re* Marco Guldenaar Holding B.V., 911 F.3d 1157, 1161–62 (Fed. Cir. 2018).

231. *Id.* at 1161.

232. *In re* Miller, 418 F.2d 1392, 1396 (C.C.P.A. 1969); *see also In re* Gulack, 703 F.2d 1381, 1385 (Fed. Cir. 1983).

233. *See* LEMLEY & MAITRA, *supra* note 18, at 159–61 ("Most of those include unique physical pieces or tokens; claims to games that use standard dice or card decks have been as improperly claiming abstract rulesets." (quotations omitted)); Ryan Cudnik, *Gaming Patents And "Abstract Ideas": What Are The Rules Of The Game?*, 37 CGI MAGAZINE 35, 37 (2019).

234. *In re* Marco Guldenaar Holding B.V., 911 F.3d 1157, 1161–62 (Fed. Cir. 2018).

235. *See* Seaman & Tran, *supra* note 223, at 1647 ("[I]t appears that tabletop games likely will not qualify as patentable subject matter unless they include new and nonobvious game pieces or mechanics . . . .").

C. Video Games

To be valid, video game patents must also be novel, nonobvious, and of patentable subject matter. Since *Alice*, patentability has become a major hurdle for video game patents[236] and patentable-subject-matter litigation has dramatically increased.[237] Because video games are digital, their game mechanics cannot be tied to physical pieces.[238] As such, the Federal Circuit evaluates video games more like functional software than tabletop games, making patentability unlikely for anything that is not a technological solution.[239]

McRO Inc. v. Bandai Namco Games Am., Inc., for example, offers a rare case of the Federal Circuit upholding claims over video game software.[240] The patent at issue claimed methods of creating speaking animations by creating facial expressions through a variety of weights and transitioning between weight values continuously.[241] The court found the claims patentable under *Alice* step one, relying on its finding that the method did not carry out the animating in the same way as conventional methods.[242] The court also noted that the method did not claim "all processes for achieving automated lip-synchronization,"[243] leaving the basic concepts at issue open to the public.[244]

Of course, this patent discloses a technical improvement to animation, not a change in gameplay. Novel gameplay can rarely be tied to a technical improvement.[245] Additionally, scholars warn against overreading *McRO*.[246] Claims to technical improvements in gaming have been found ineligible for protection where the court viewed the claims as directed to the concept of an abstract idea rather than a sufficiently detailed implementation of that idea.[247]

But in *Gree, Inc. v Supercell OY*, the Federal Circuit reviewed a game mechanic patent and doubled down on the importance of technical improvement.[248] The case concerned a gameplay patent which claimed methods of using templates to copy

236. Ard, *supra* note 18, at 1333–34.

237. Lemley & Zyontz, *supra* note 183, at 49–50 (finding that patentable-subject-matter litigation increased dramatically after 2014).

238. Some exceptions apply. *See, e.g.*, U.S. Patent No. 9,381,430 (filed May 5, 2017) (describing a method associated with *Skylanders* for toys to interact with a video game).

239. Héctor Camilo Herrera González, *Protection of Video Game Mechanics Through the Patentability of Software*, 27 REVISTA LA PROPIEDAD INMATERIAL 69, 85 (2019) ("[T]he mechanics must contain an inventive element beyond the underlying abstract idea, in order to solve practical problems, going further than routine or conventional activities previously known to the industry."). This disparate treatment occurs, in part, because in *In re Smith* and *In re Marco* are applications of the functional-relation exception to the printed matter doctrine. But this is not a coherent reason for video games to be permitted less patentability than their physical counterparts. If it was, then video games would be *less* patentable because they are *not* considered printed matter.

240. McRO, Inc. v. Bandai Namco Games Am. Inc., 837 F.3d 1299 (Fed. Cir. 2016).

241. *Id.* at 1306-08.

242. *Id.* at 1314.

243. *Id.* at 1315.

244. *See* Krishnan, *supra* note 191, at 297 and accompanying text.

245. *See, e.g.*, *supra* Section I.B.

246. *See* LEMLEY & MAITRA, *supra* note 18.

247. Recognicorp v. Nintendo, 855 F.3d 1322 (Fed. Cir. 2017) (finding method for encoding /decoding image data ineligible under Section 101 because it lacked an inventive concept).

248. GREE, Inc. v. Supercell Oy, 834 F. App'x 583 (Fed. Cir. 2020).

arrangements of game content.[249] The patent described the invention in the context of a city-building game, and that its invention allows users to more easily construct their cities by creating templates for specific arrangements of buildings and other structures.[250]

The court held that claims 1–4, 8–9, and 10–20 are ineligible for patent protection; and that claims 5–7 are not ineligible.[251] Claims 5–7 describe how to handle mismatched template scenarios.[252] Claim 5, for example, described a method where—applied to a city building game—if the number of buildings is fewer than the number of buildings in the template, the computer moves the buildings to the template positions that they are closest to.[253]

In step one of *Alice*, the court affirmed that the patent's claims are "directed to the abstract idea of creating and applying a template."[254] In step two, the court held that only the patent claims which handled mismatched template scenarios were eligible, although that was a "close question."[255] These "claim a solution to a technological problem" and go beyond creation and application of templates in a computer game, which is established nonpatentable subject matter.[256] That is, the court found that only claims which solved technological problems were patentable, a position that the majority chose not to adopt in *In re Marco*.[257]

While commentators warn about the difficulty of extrapolating principles of video game patentability from so few cases,[258] the Federal Circuit has been consistent. In *Savvy Dog Systems, LLC v. Pennsylvania Coin, LLC*, the court specified that the solution provided by video game patents must be a "technological solution."[259] In *Planet Bingo, LLC v. VKGS LLC*, the court stated the same.[260] This

249. *Id.* at 586 ("[W]hen the template is applied to a predetermined area within the game space based on the command by the player, moving, by the computer, the game contents arranged at the first positions within the game space to the second positions of the game contents defined by the template within the predetermined area.").

250. U.S. Patent No. 9,597,594 (filed Dec. 30, 2015).

251. *GREE*, 834 F. App'x at 590.

252. *Id.* at 586.

253. U.S. Patent No. 9,597,594 (filed Dec. 30, 2015).

254. *GREE*, 834 F. App'x at 588.

255. *GREE, Inc.*, 834 F. App'x at 589.

256. *Id.* at 588 ("[M]ere automation of manual processes using generic computers does not constitute a patentable improvement in computer technology." (quoting Credit Acceptance Corp. v. Westlake Servs., 859 F.3d 1044, 1055 (Fed. Cir. 2017))).

257. *See In re* Marco Guldenaar Holding B.V., 911 F.3d 1157, 1162 (Fed. Cir. 2018) (Mayer, J., concurring) ("[C]laims directed to dice, card, and board games can never meet the section 101 threshold because they endeavor to influence human behavior rather than effect technological change."); *see also id.* ("While games may enhance our leisure hours, they contribute nothing to the existing body of technological and scientific knowledge.").

258. Forrest A. Jones, Y. Leon Lin & Kevin D Rodkey, *Playing to Win: The Post-Alice Video Game Patent Landscape*, FINNEGAN (Mar. 3, 2020), https://www.finnegan.com/en/insights/articles/playing-to-win-the-post-alice-video-game-patent-landscape.html [web.archive.org/web/20210801020726/https://www.finnegan.com/en/insights/articles/playing-to-win-the-post-alice-video-game-patent-landscape.html] ("[E]ach case turns on its own facts, and there may not be a clear shortcut to guarantee patentable subject matter in all cases . . . .").

259. Savvy Dog Sys., LLC v. Pennsylvania Coin, LLC, No. 2023-1073, 2024 WL 1208980 (Fed. Cir. Mar. 21, 2024) (holding that a game patent is ineligible because its invention's benefits are "due to when the game field is displayed, not how it is displayed").

260. Planet Bingo, LLC v. VKGS LLC, 576 F. App'x 1005 (Fed. Cir. 2014).

rule offers little protection for gameplay patents, giving the industry minimum support against the rising threat from imitators.

III. PROTECTING VIDEO GAME PIECES

Practitioners are pessimistic about the patentability of video gameplay.[261] Indeed, *Gree* and *Savvy Dog* suggest that video game patents must claim a technological solution to be of patentable subject matter. Midway's ghost car then, offering no technological solution, would not qualify. Neither would *The Medium* patent nor Namco's loading screen patent. In a tabletop game, however, the ghost car as a physical figurine with unique functional characteristics certainly seems patentable under *In re Smith* and *In re Marco*.[262]

There appears to be little rationale or intention behind this decision to grant video games less patentability than their exact physical replicas.[263] But that has occurred nonetheless. While the patent at issue in *In re Smith* covered physical and digital playing cards, Smith did not so much as attempt to appeal the patentability of the digital version.[264] Commentators found this decision "understandable"—not because it would have failed on the same grounds as the physical version, but because it did not "utilize[] the computer system to achieve a functionality not possible otherwise or to solve a specific technological problem."[265]

To create a more consistent doctrine, promote video gameplay innovation, and protect developers from the rising threat of AI-assisted imitation, claims to original in-game virtual objects should transform abstract rules to patentable subject matter under step two of *Alice*. This a fairly conservative adjustment: It would not affect most video gameplay patents, or even most of the patents in Section I.B. But it would encourage patents which share the desirable traits identified in Section I.B and encourage the concrete claiming that software patents are so frequently critiqued for lacking.[266]

A. The Proposal

For such a rule to work, it must be well defined. An "in-game virtual object" is an object within the virtual world of the video game. Like physical game pieces per *In re Marco*, an in-game virtual object transforms abstract rules to patentable subject matter only if the virtual object contains unconventional features without which the abstract rules could not function similarly.[267]

---

261. *See* Cudnik, *supra* note 233.

262. *See supra* note 233 and accompanying text.

263. *Savvy Dog Sys., LLC*, 2024 WL 1208980 (providing no rationale for using a different test than *In re Smith* and *In re Marco*); GREE, Inc. v. Supercell Oy, 834 F. App'x 583 (Fed. Cir. 2020) (same); McRO Inc. v. Bandai Namco Games Am., Inc., 837 F.3d 1299 (Fed. Cir. 2016) (same); *Planet Bingo, LLC*, 576 F. App'x 1005 (same).

264. *In re* Smith, 815 F.3d 816, 817 (Fed. Cir. 2016).

265. Bruce Itchkawitz, *Navigating the Needle's Eye: Patenting Games of Chance*, JDSUPRA (Mar. 17, 2016), https://www.jdsupra.com/legalnews/navigating-the-needle-s-eye-patenting-38523/ [perma.cc/FG6X-BR68].

266. *See* Lemley, *supra* note 67, at 930; Jonathan Rosenberg, *Software Patents Considered Harmful*, MEDIUM (Nov. 20, 2018), https://medium.com/@jdrosen2/software-patents-considered-harmful-868166fa437d [perma.cc/38DJ-37GR].

267. *In re* Marco Guldenaar Holding B.V., 911 F.3d 1157, 1161 (Fed. Cir. 2018) (deeming unconventional die markings unpatentable because they lacked a functional relationship to the rest of

Several examples help demonstrate the contours of this "original object" rule. One game, *Tears of the Kingdom*, pioneered a particularly realistic physics system that greatly enhanced gameplay.[268] But, insofar as the objects in the game do not have unconventional aspects which allow the game's physics to function, those objects do not transform the game's abstract rules regarding movement into patentable subject matter. That is, a new method for handling the physics of a boulder would not qualify under this rule unless the boulder had some unconventional "physical" characteristic which the abstract rules could not function similarly without. The game's pots, in contrast, had "joints" on the bottom so that their contents would not spill while moving.[269] If unconventional, under the proposed rule these jointed pots could transform the relevant physics rules into patentable subject matter. Future developers who copied both the jointed pots and the associated physics rules could be held liable.

Another *Legend of Zelda* game, *Breath of the Wild*, introduced a new mechanic for climbing.[270] However, the physical object (the player-character) had no unconventional characteristics that allowed the climbing mechanic to function. Rather, its character model included four limbs with joints matching those of a human: a standard in the industry. Contrast this with the climbing in *Bread & Fred*, a two-person game where the characters climb using a rope attached to them and swinging off of each other.[271] Insofar as a rope connecting two players is an unconventional virtual object, aspects of *Bread & Fred*'s gameplay which could not work the same with conventional objects would be patentable.

Certainly, not all applications of this original object rule will be clear: Video games can blur the line between abstract rules and virtual objects in challenging ways. *Donut County* debuted gameplay where players would move a hole in the ground to try to "eat" objects in order to grow the hole and eat larger objects.[272] It is not obvious whether the "virtual object" here is merely the hole and the hole's moving, eating, and growing are abstract rules, or if the virtual object should be defined more broadly. If the virtual object is merely the hole, then there seems to be nothing unconventional about the object. But if moving, eating, or growing are part of the object, then these seem to be patentable, unconventional aspects that are essential to *Donut County*'s gameplay.

One answer could be that the "virtual object" includes *how* it can be changed, but not why or when. This would include the object's ability to change size, shape, or color—but not the conditions under which these changes occur. Such a distinction mimics how physical pieces operate: The ability to change size would

---

the dice). The viability of extrapolating such ideas from the printed matter doctrine is discussed in Part III.C.1 below.

268. Bryant Francis, *How Nintendo Did the Impossible with Tears of the Kingdom's Physics System*, GAME DEV. (Apr. 3, 2024), https://www.gamedeveloper.com/programming/how-nintendo-did-the-impossible-with-tears-of-the-kingdom-s-physics-system [perma.cc/WJ32-56YQ].

269. *Id.*

270. Cameron Swan, *More Games Should Adopt Zelda: Breath of the Wild's Climbing Mechanics*, GAME RANT (Oct. 12, 2022), https://gamerant.com/zelda-breath-of-the-wild-climbing-mechanics-other-games-good/ [perma.cc/7XEA-MSSX].

271. GAMETRAILERS, *Bread and Fred - Official PC Launch Trailer* (YouTube, May 23, 2023), https://youtu.be/jTB28_7j4Bc?t=23 [perma.cc/BR7Y-9SKW].

272. Ben Esposito, *Donut County*, STEAM (Aug. 28, 2018), https://store.steampowered.com/app/702670/Donut_County/ [perma.cc/6YST-KYFL].

require an innovative new physical piece—such as one which can expand and retract its circumference—whereas implementing the conditions for growth would merely involve a player moving the piece in accordance with a game rule. Mimicking this distinction in physical games would allow video game piece patenting to be constrained in a similar manner to physical game piece patenting and likely avoid overly broad claiming because of it.

Under this interpretation *Donut County* could survive step two of *Alice*, so long as a moveable hole that grows in set increments was indeed a "new or original"[273] virtual object. But, if such an object was not new, the original object rule would not apply even if it was original for a hole to grow when enough items fall in. The physical analog of the expandability of a virtual hole is a game piece with a mechanism allowing it to expand and retract. This mechanism is a part of the piece, like the mechanisms behind laser chess.[274] The analog of the hole growing when objects fall in, however, is a game rule telling players the conditions in which they should manually expand the game piece.[275]

Such a rule would be a conservative extension of patentability. Sega owns a patent, associated with their game *Crazy Taxi*, that claims an arrow above the player which points in the direction of their destination.[276] This would be unlikely to qualify under the original object rule. There is little novel about an arrow object, and that it points towards a destination seems best understood as a condition governing its movement. Likewise, the rule's applicability to Midway's ghost car —for all its innovative value[277]—would depend on whether a semi-transparent car[278] is a sufficiently original object.

Importing the "new and original" object requirement also raises questions that the courts have not answered for board games. Consider the video game *Threes*, for example, which uses tiles with the numbers 1, 2, 3, and 6^n and a square, grided board with a walled border.[279] Numbered tiles are certainly not original—Rummikub used them in the 1950s.[280] But if there was not a game with a tile set numbered with 1, 2, 3, and 6^n, it is unclear whether such a set could be sufficiently original. *In re Smith*

---

273. *In re* Smith, 815 F.3d 816, 819 (Fed. Cir. 2016).

274. *See* U.S. Patent 7,264,242 (filed Feb. 13, 2006); Innovention Toys, LLC v. MGA Ent., Inc., 637 F.3d 1314 (Fed. Cir. 2011) (discussing only obviousness as an invalidity concern).

275. Admittedly, one could imagine a physical game piece with the sophistication to expand and retract automatically. The distinction between virtual objects and virtual rules still holds, however, insofar as such a feature "merely require[s] generic computer implementation" of actions otherwise taken by the player. Alice Corp. v. CLS Bank Int'l, 573 U.S. 208, 221 (2014).

276. U.S. Patent 6,200,138 (filed Oct. 30, 1998).

277. *Supra* Part I.B.2.

278. LET'S ALL PLAY, *Hard Drivin' (Sega) - Beat the Phantom Photon's Time [The New Hard Drivin Champion!]* (YouTube, July 10, 2024), https://www.youtube.com/watch?v=0T7Vy2Tx5f0 [perma.cc/KZA9-AYJS] (showing gameplay with Midway's Ghost Car, or "Phantom Photon").

279. *See* Takahashi, *supra* note 161.

280. *History*, RUMMIKUB, https://rummikub.com/history/ [perma.cc/4HCD-VJ3Y] (last visited July 8, 2025). An ambitious patent seeker might argue that the existence of physical objects should not make video game objects less original. But even if digital numbered titles did not exist before *Threes*, such an argument seems contrary to the guidance from *Alice* on merely generic computer implementation. *Alice Corp.*, 573 U.S. 208, 221 (2014). The *Pong* patent, then, mimicking physical paddles, may not claim a new or original virtual object, even if the patent itself could still be patentable and nonobvious. U.S. Patent 28,507 (filed Oct. 30, 1998) (*Pong* patent); *see* William K. Ford, *Copy Game for High Score: The First Video Game Lawsuit*, 20 J. INTELL. PROP. L. 1, 38 nn. 267–69 (2012) (listing litigation over the *Pong* patent, albeit prior to several developments in patent doctrine).

suggested the novel card decks in *Skip-Bo* or *Uno* might have passed *Alice* at the time they were invented,[281] but offers little indication as to why. Compared to the standard deck, *Uno* has the same number of suits/colors, numbers one through nine in each suit, each number-color combination twice, and several special cards (Skip, Reverse, Draw Two, Wild).[282] If *Uno*'s novelty was in its special cards, the original object rule would not apply to *Threes*'s tile set.[283] But if originality can be in the quantity and specific numbers present in a deck, the original object rule would have allowed *Threes*'s developers to protect and license their innovation,[284] potentially generating the funding for more iconic game puzzles today.[285]

In either event, crafting a rule that grants video game pieces the full protection of their physical counterparts, without permitting a flood of undesirable claims, would be an ongoing project. Video game patentability is not limited to the original object rule. Rather, beginning to apply the principles from *In re Smith* and *In re Marco* to video game pieces can allow for some benefits to the video game industry, without encouraging overexpansive claiming.

B. The Benefits

Applying the *In re Smith* and *In re Marco* standards to video gameplay patentability analysis would relieve a critical problem in the gaming industry. As discussed above, there is a compelling argument that the video game industry currently innovates at an inefficiently low level because of the lack of intellectual property protection available to developers.[286] This problem is likely to worsen as large developers' alternatives to intellectual property protection are weakened by AI-assisted tools, making it more difficult for developers to distinguish their games as well.[287]

Granting developers more certain protection over their novel virtual objects encourages more novel virtual objects, as well as the novel video gameplay associated with them. It can provide an outlet for AAA studios to redirect their asset generation costs and meet market demand for differentiated high-budget games. It

---

281. *See supra* note 229.

282. *UNO Cards*, LETS PLAY UNO (Dec. 29, 2017), https://www.letsplayuno.com/news/guide/20181213/30092_732567.html [perma.cc/RJB2-YJB5].

283. *Threes*'s could still have created something original in the combination of its tile set and walled grided board, as *In re Smith* indicates that originality can be found in the combination of objects. *See In re* Smith, 815 F.3d 816, 819 (Fed. Cir. 2016).

284. Kevin Nguyen, *Revisiting Threes, 2048, and the Endless Chain of Ripoffs*, VERGE (Feb. 10, 2022), https://www.theverge.com/22914955/threes-2048-ketchapp-copycats-clones-mobile-games [web.archive.org/web/20251002174820/https://www.theverge.com/22914955/threes-2048-ketchapp-copycats-clones-mobile-games] ("[*Threes* is] the kind of project that needs to be endlessly tweaked and playtested. . . . Over a year of work, and it took just three weeks for the first clone to appear.").

While *Threes*'s most prominent copycat, *2048*, used a different tile set (2^n), an astute patent prosecutor—noticing that *Threes*'s game rules could work with tiles numbered 2^n or 4^n—could have claimed the combination of *Threes*'s game rules and tile sets containing tiles numbered X^n. The original tile set could satisfy *Alice* step two, and the prosecutor would likely have to include *Threes*'s rules to satisfy 35 U.S.C. § 103. As such, *Threes*'s developers could get licenses from nearly identical puzzles such as *2048* while remaining unable to monopolize all X^n tile games for the duration of their patent term.

285. *Id.* (reporting that the profit from *Threes* went into more game development).

286. *See supra* Part I.C; *see also* Ard, *supra* note 18, at 1359, 1369.

287. *See supra* Part I.C.

also grants indie developers protection from the challenges they already face, allowing for more games like *Donut County* and *Threes*. Further, encouraging the development of more long-standing gameplay improvements has cumulative effects on game quality, benefiting the entire industry.

There are good reasons, however, to worry that expanding the patent system will hamper innovation more than promote it. This Article's "original object" rule offers particular benefits which make it an effective solution.

The first benefit offered by the original object rule is that it provides developers with much more certainty regarding patentability. Expanding patentability will not change the gaming industry if developers do not take advantage of the expansion, and scholars have emphasized the practical challenges the patent system poses for developers.[288] The average cost for a patent is over $20,000 and patents may not issue for twenty-three months.[289] This, combined with the current uncertainty over the patentability of most video gameplay innovations, means that it is generally not worthwhile for developers to seek patents. This is a self-perpetuating problem: Little doctrinal certainty leads to few patents, which results in few patent cases, which results in little clarification from the courts. The proposed rule creates a clear brightline for at least some inventions, encouraging inventors to pursue desirable patents more and settle meritorious claims less.

The second benefit is more concrete claiming. A common criticism of software patents is that they are inherently vaguer and more abstract than patents over physical apparatuses, allowing patentholders to stifle innovation by claiming more than they actually invented.[290] Emphasizing the physical-resembling aspects of video gameplay innovations can free a subset of software patents from such concerns. As physical objects in a virtual world, digital game pieces can be defined more concretely and specifically than other aspects of video games, making for precise claims that do not "risk disproportionately tying up" the use of abstract ideas.[291] Just as the informal game piece requirement is a proven limit for tabletop patents, so too could the same requirement effectively limit video game patents.

Relatedly, claiming digital game pieces appears less likely to capture entire game types and less likely to capture innovations whose benefit will fade as technology advances—even more so than many technological improvements. Innovations in facial modeling might be incorporated into subsequent advances or rendered obsolete.[292] In comparison, the functioning and value of jointed pots, swinging ropes, and playable holes is relatively disconnected from the limitations of video game hardware. As such, encouraging developers to emphasize game pieces

---

288. *See* Ard, *supra* note 18, at 1334–35; DAVID GREENSPAN & GAETANO DIMITA, MASTERING THE GAME: BUSINESS AND LEGAL ISSUES FOR VIDEO GAME DEVELOPERS – A TRAINING TOOL 95–96 (2022).

289. USPTO, PERFORMANCE AND ACCOUNTABILITY REPORT: FISCAL YEAR 2020 46–47 (2020).

290. *See* Rosenberg, *supra* note 266; Athul Acharya, *Abstraction in Software Patents (and How to Fix It)*, 18 J. MARSHALL REV. INTELL. PROP. L. 364, 378 (2019) ("[M]ost of the problems with software patents stem from 'broad functional claiming of software inventions.'" (quoting Lemley, *supra* note 67 at 908)).

291. Mayo Collaborative Servs. v. Prometheus Lab'ys, Inc., 566 U.S. 66, 72 (2012).

292. *See* McRO, Inc. v. Bandai Namco Games Am. Inc., 837 F.3d 1299, 1314 (Fed. Cir. 2016) (evaluating a patent that claimed an alternative process for conventional lip-synchronization techniques rather than an improvement).

in their claims is likely to result in more patents whose contributions remain useful for decades past their expiration,[293] protecting the public's interest in patent law's quid pro quo.[294]

C. Answering Objections

Neither scholars nor judges have explicitly contemplated the application of *In re Smith* and *In re Marco* to the patentability of video gameplay.[295] But if this application is as beneficial and doctrinally sound as the prior Sections suggest, why has it not been suggested in the decade since *In re Smith*? The most obvious answer is that jurists rarely contemplate the patentability of video gameplay at all. It has been mentioned only in a few paragraphs of a recent article[296] and as the subject of two notes (one of which predates *Alice*).[297] Judges, likewise, rarely see these questions in court.[298] Yet, through what discussion exists, several potential objections appear salient.

1. Doctrinal Differences

This Section proposes that novel video game pieces can transform abstract rules into patentable subject matter where the novel aspects of the game piece are functionally related to the abstract rules. The proposal appears chiefly subject to two doctrinal objections. First, no physical game inventions are patentable. Second, the "functionally related" test impermissibly applies the printed matter doctrine to software. Neither concern, however, withstands scrutiny.

The objection to physical game patents. This Article proposes that the broader patentability offered to physical games should be applicable to video games. A skeptical jurist could respond that the dicta in *In re Smith* and *In re Marco* is wrong, and that physical games are not patentable either. Indeed, this view was expressed by Judge Mayer in his concurrence to *In re Marco*.[299] He argued that *Alice* laid out a "technical arts" test which extends patentability to scientific innovation but not to social, commercial, or economic innovation.[300] He draws on the Constitution as well, arguing that because it empowers Congress to "promote the progress of

293. *See supra* notes 79–82.

294. *Id.*

295. *See, e.g.*, Savvy Dog Sys., LLC v. Pa. Coin, LLC, No. 2023-1073, 2024 WL 1208980 (Fed. Cir. Mar. 21, 2024) (providing no rationale for using a different test than *In re Smith* and *In re Marco*); GREE, Inc. v. Supercell Oy, 834 F. App'x 583 (Fed. Cir. 2020) (same); McRO Inc. v. Bandai Namco Games Am., Inc., 837 F.3d 1299 (Fed. Cir. 2016) (same); Planet Bingo, LLC v. VKGS LLC, 576 F. App'x 1005 (Fed. Cir. 2014) (same).

296. *See* Ard, *supra* note 18, at 1333–34.

297. *See generally* Kyle Gross, Comment, *Game On: The Rising Prevalence of Patent-Related Issues in the Video Game Industry*, 12 SMU SCI. & TECH. L. REV. 243 (2017); Elena Gurau, *The Dimensions of Gameplay: Presenting an Alternative to Video Game Copyrights for Games Without Narratives*, 19 J. BUS. & TECH. L. 449 (2023).

298. *See* Ard, *supra* note 18, at 1334.

299. *In re* Marco Guldenaar Holding B.V., 911 F.3d 1157, 1162 (2018) (Mayer, J., concurring) ("[C]laims directed to dice, card, and board games can never meet the section 101 threshold because they endeavor to influence human behavior rather than effect technological change.").

300. Austin Steelman, Note, *Curiouser and Curiouser! Why the Federal Circuit Can't Make Sense of* Alice, 98 J. PAT. & TRADEMARK OFF. SOC'Y 374, 384 (2016).

science and *useful* arts,"[301] innovations which merely "enhance our leisure hours" should not be patentable.[302]

At the onset, it should be noted that existing caselaw and intellectual property practices contradict Mayer. Between his concurrence and the dicta in both *In re Smith* and *In re Marco*, the Federal Circuit appears to tentatively lean in this Article's favor. Additionally, previous scholarship notes that Mayer's argument contradicts a long history of patenting tabletop games, which has continued after *Alice*.[303] As has the patenting of other leisure-oriented inventions in children's toys,[304] adult products,[305] and (of course) video gameplay.[306] While not all of these patents are common, it seems unlikely that they are all invalid.

Additionally, there is little support for the argument that "science and useful arts" excludes enhancements to our leisure. This same language is the source of copyright law,[307] yet the latest trashy fiction novel is definitively both copyrightable and directed toward our leisure. Common justifications for patent law, such as growing the domain of public knowledge and facilitating efficient transactions, are perfectly applicable to gaming patents as well.[308]

Finally, the "technical arts" test would, if anything, disclaim game rules, not game pieces. While game rules may "merely organize human activity,"[309] game pieces are hardly within the domain of social interactions. As such, regardless of where digital game rules fall, a standard which only allows game rules to be patented if they are closely tied to a game piece innovation seems reasonable under Mayer's test.

The printed matter objection. A skeptical jurist might instead go in the opposite direction and argue that video gameplay is far more patentable than this Article allows. They could point out that the "functionally related" test taken from *In re Marco* is used there as an application of the printed matter doctrine.[310] Insofar as the novel component of a video game piece is not printed matter, that limitation should not apply. As such, this jurist might argue that applying *In re Smith* and *In re Marco* to video game innovations should give rise to a much more expansive vision of patentability. This would constitute a much more radical change that what has

---

301. U.S. CONST. art. I, § 8, cl. 8 (emphasis added).

302. *In re Marco*, 911 F.3d at 1166 ("While games may enhance our leisure hours, they contribute nothing to the existing body of technological and scientific knowledge.").

303. Seaman & Tran, *supra* note 223, at 1647 n.251.

304. Amanda Lowerre O'Donnell & Jacqueline Thompson, *Toy Meets World: IP Strategies for the Toy Industry*, 13 LANDSLIDE Jan.-Feb. 2021, at 5, 7 (2021).

305. Andrew Gilden & Sarah R. Wasserman Rajec, *Pleasure Patents*, 63 B.C. L. REV. 571, 574 (2022).

306. *See supra* Part I.A.

307. Karl Fenning, *The Origin of the Patent and Copyright Clause of the Constitution*, 17 GEO. L.J. 109, 114 (1929).

308. *See supra* notes 104–113 and accompanying text (demonstrating how video gameplay patents can contribute to public knowledge); *supra* notes 121–122 and accompanying text (demonstrating how video gameplay patents can facilitate transactions).

309. *In re* Marco Guldenaar Holding B.V., 911 F.3d 1157, 1165 (Fed. Cir. 2018) (Mayer, J., concurring) (citing Ariosa Diagnostics, Inc. v. Sequenom, Inc., 809 F.3d 1282, 1289 (Fed. Cir. 2015) (Dyk, J., concurring)).

310. *In re Marco*, 911 F.3d at 1157. Under this doctrine, printed matter, or information "claimed for its communicative content," is not patentable subject matter. C R Bard Inc. v. AngioDynamics, Inc., 979 F.3d 1372, 1381 (Fed. Cir. 2020); *In re* Distefano, 808 F.3d 845, 848 (Fed. Cir. 2015).

been proposed here, and one with a far greater risk of hampering innovation like many patent critics have warned.[311]

The objection here, like its prior, exists because of the relative lack of caselaw on gameplay patents—even physical ones. Without the "functionally related" test, *In re Smith* and *In re Marco* provide little guidance on how to determine whether an original game piece is sufficiently related to a game rule to help it survive step two of *Alice*. At minimum, *In re Smith* makes it clear that—even outside of the printed matter context—new or original physical pieces are critical to surviving step two of *Alice*.[312]

Additionally, even if the original object rule is narrower than what current doctrine requires, there is substantial value in its adoption by practitioners. The rule offers significantly more breadth and certainty compared to current patenting practices. As such, it allows developers to invest in patent prosecution with less risk of invalidity,[313] while its narrowness can guard against the gaming community's policy concerns.[314] By slowly alleviating the rising AI threat[315] and bringing more video gameplay cases to courts and scholars, the functionally related test brings the gaming industry closer to a stable, innovative equilibrium.

2. Industry Norms

Much of this Article has been dedicated to understanding the normative cases for and against video game patents. Part I laid the empirical and analytical foundation for conceptualizing video game patents. Thus far, Part III has argued there is a doctrinal basis for expanding patentability and that narrow expansion would affect desirable patent applications. But the desirability of individual patents is not the full picture. Two norms in the gaming industry give rise to potential objections: (1) the industry's current tendency to patent relatively infrequently, and (2) the industry's tendency to advertise by analogy. First, there is the risk that desirable patents can incentivize developers to seek out less desirable patents for defensive leverage, starting an arms race which extends patenting far beyond what the functionally related rule would suggest. Second, there is the risk that the nature of advertising in the gaming industry makes patenting particularly unprofitable. If this is true, developers would not take advantage of an expanded patentability inquiry, and a different solution to the AI-imitation threat is needed.

The war chest objection. Readers familiar with the "Smartphone Patent Wars"[316] might worry that increasing the number of video game patents risks creating a harmful feedback loop. One rationale for acquiring patents is to build a "war

311. *See, e.g.*, Garcia, *supra* note 6; Harmon, *supra* note 8; Wood, *supra* note 13; Kamen, *supra* note 73.

312. Seaman & Tran, *supra* note 223, at 1647; LEMLEY & MAITRA, *supra* note 18, at 161; Ard, *supra* note 18, at 1334; *see also* Cudnik, *supra* note 233, at 233.

313. Uncertainty is currently a particularly imposing barrier for video game developers deciding whether seeking a patent is worthwhile. *See* Ard, *supra* note 18, at 1334.

314. *See, e.g.*, Garcia, *supra* note 6; Harmon, *supra* note 8; Wood, *supra* note 13; Kamen, *supra* note 73.

315. *See infra* Part I.C.

316. Jack Nicas, *Apple and Samsung End Smartphone Patent Wars*, N.Y. TIMES (June 27, 2018), https://www.nytimes.com/2018/06/27/technology/apple-samsung-smartphone-patent.html [perma.cc/Y7ZM-U277].

chest."[317] That is, companies acquire patents so if they are sued for infringing a different patent, they can sue back.[318] This practice has become a near-necessity for products like smartphones: Some estimate that as many as 250,000 patents implicate smartphones, making it unrealistic to avoid infringement.[319] Some industry commentators and professionals worry that the video game industry is already at risk of requiring war chests.[320] While scholars generally view the video game industry as relatively patent free,[321] some companies acquiring more patents can push their competitors develop active patenting practices as a defensive measure.[322] This feedback loop can chill innovation,[323] punish smaller players,[324] and waste resources on unnecessary patents.[325] Additionally, mutually assured damage is not a stable equilibrium. Destruction can break out[326] and patent-laden industries are vulnerable to suits by non-practicing entities.[327]

While the idea of a one-way ratchet patent arms race makes for a worrisome story, it does not withstand scrutiny. Video gameplay patents are relatively rare, but they are hardly nonexistent.[328] Nintendo has had a relatively active patent practice for years, and the number of industry patents is still low.[329] It seems unlikely that the original object rule would cause a feedback loop when existing patents do not. Additionally, war chests for smartphone patents are necessary and effective because smartphone innovations tend to build upon countless prior innovations.[330] Smartphone developers need war chests because they cannot reasonably avoid

317. Gregory R. Day & W. Michael Schuster, *Patent Inequality*, 71 ALA. L. REV. 115, 118 (2019).

318. Or otherwise navigate patent thickets by negotiating from a position of strength entry into patents pools and cross-licensing agreements. *See* Ronald A. Cass, *Lessons from the Smartphone Wars: Patent Litigants, Patent Quality, and Software*, 16 MINN. J.L. SCI. & TECH. 1, 28 (2015) (discussing means of addressing the transactional costs and hold-up problems associated with patent thickets).

319. *See* William F. Lee & Mark A. Lemley, *The Broken Balance: How "Built-in Apportionment" and the Failure to Apply* Daubert *Have Distorted Patent Infringement Damages*, 37 HARV. J.L. & TECH. 255, 268 n.44 (2024).

320. *See* JoeThreeZero, *Our Take: WB Patents the Nemesis System – It Is Unlikely to Affect the Industry*, GAMEOVERTHIRTY (Feb. 16, 2021), https://gameoverthirty.com/our-take-wb-patents-the-nemesis-system/ [perma.cc/J5BQ-NY3G].

321. *See* Ard, *supra* note 18, at 1332 ("While some game mechanics are patented—like the 'falling object' gameplay of Dr. Mario—patents in gameplay are rare and have seldom been asserted against clones."); LEMLEY & MAITRA, *supra* note 18, at 133 ("[T]here are surprisingly few cases in which people seek to patent the game itself.").

322. *See* Cass, *supra* note 318.

323. Carl Shapiro, *Navigating the Patent Thicket: Cross Licenses, Patent Pools, and Standard Setting*, *in* 1 INNOVATION POLICY AND THE ECONOMY 144 (Adam B. Jaffe et al. eds., 2001).

324. Gregory R. Day & W. Michael Schuster, *Patent Inequality*, 71 ALA. L. REV. 115, 145 (2019).

325. James Bessen, *Patent Thickets: Strategic Patenting of Complex Technologies* 17–20 (Research on Innovation, Working Paper No. 0401, 2004), http://www.researchoninnovation.org/thicket.pdf.

326. *See* Nicas, *supra* note 316.

327. *See* Cass, *supra* note 318, at 32–37.

328. *See supra* Figure 2 (conservatively estimating hundreds of successful video gameplay patent applications are submitted to the USPTO annually).

329. Jarvis the NPC, *Gaming News: The Controversy Over Nintendo's Patents in the Gaming Industry*, PORTAL (Sep. 24, 2024), https://www.zleague.gg/theportal/gaming-news-the-controversy-over-nintendos-patents-in-the-gaming-industry/ [perma.cc/E2C2-25TD]; Jim Norman, *Nintendo Has Seemingly Filed More Patents for Mario Wonder and Zelda: TOTK*, NINTENDO LIFE (Feb. 6, 2024), https://www.nintendolife.com/news/2024/02/nintendo-has-seemingly-filed-more-patents-for-mario-wonder-and-zelda-totk [perma.cc/DC2M-N3WC].

330. Day & Schuster, *supra* note 317, at 118.

infringement. Gameplay innovations do not build or iterate upon themselves to nearly the same degree.

The lost referral objection. Some argue that developers hurt their own profits when they exact rent on similar games.[331] That is, a player who enjoys an innovative aspect in one game is likely to seek out other games with that same aspect. By allowing competitors to copy your game, the argument goes, developers turn their competitors into referrals.[332]

That the gaming community makes frequent comparisons is true enough. Indeed, using one video game as a point of reference to describe another video game is an incredibly common practice.[333] However, such comparisons may be so common and overused that they lose their meaning and referral effect.[334] Additionally, the comparisons necessarily direct customers from the game which introduced them to the mechanic to a derivative. It is unclear how the popular game *The Legend of Zelda* benefits when customers are told, if they like *Zelda*, they should try specific games which copied *Zelda*'s mechanics. Given that consistent gameplay patenting already exists, and the industry's much higher patenting rate prior to *Alice*,[335] developers seem to agree that video game patenting is not as unprofitable as critics suggest.

CONCLUSION

The video game community and public interest groups have long expressed fervent dissatisfaction with video gameplay patents. These concerns have so far gone unexamined by legal scholarship. But as AI-assisted tools eliminate developers' informal options for protecting their investments from imitators, the dangers from gameplay copying have already begun to increase. Whether more gameplay patents are needed, or whether there are too many already, is becoming an increasingly critical question.

This Article provides the empirical and analytical foundation for answering that question. Using a naive Bayes classifier, it finds that the number of successful video gameplay patent applications dropped after Alice and remained relatively low since. Through three case studies, it identifies key characteristics of gameplay patents that promote or hinder innovation. These studies suggest that video gameplay patents can successfully promote innovation, and that video gameplay patents tend to so when they claim innovations that are (1) modular, (2) pertain to the game's in-universe content, and (3) do not alleviate a technical problem.

Drawing on caselaw related to physical board game patents, this Article proposes a framework that extends patentability to such innovations. This extension

---

331. Peter VandeVort, *The Futility of Patents on AAA Video Game Mechanics*, MICHIGAN TECH. L. REV. BLOG (2022), https://mttlr.org/2022/10/the-futility-of-patents-on-aaa-video-game-mechanics/ [perma.cc/6SHV-P4T9].

332. *See, e.g.*, Nguyen, *supra* note 284 ("[*Threes*] kind of rode the coattails of *2048*'s success in a sort of recursive, ouroboros kind of way.").

333. VIDEOGAMEDUNKEY, *Originality in Video Games* (YouTube, Sep. 23, 2021), https://www.youtube.com/watch?v=AOQzTtsr3AQ [perma.cc/X6GC-P7HS] (compiling video game reviews which describe games though comparison).

334. *Id.* (editing video game reviews satirically, showing the breath of games which are all compared to either *Zelda* or *Dark Souls*).

335. *See supra* Figure 3.

would balance the gaming community's growing need for legal protection with the risk of abstract claims chilling creators. By tying video gameplay patents to unconventional, "physical" objects within virtual worlds, this framework can guide courts and patent examiners as they attempt to delineate meaningful, concrete gameplay innovations from mere abstract ideas. In doing so, it offers a practical means of fostering innovation, while addressing the criticisms that have historically plagued gameplay patents. Striking this balance is crucial for the patent system to fulfill its constitutional directive and ensure that video games remain a vibrant and dynamic medium in the years to come.

APPENDIX

The data reviewed in this Appendix, like that in Section I.A, was collected on January 1, 2026 from TotalPatent One. The full data set, labeled sample, and accompanying code are available online.[336]

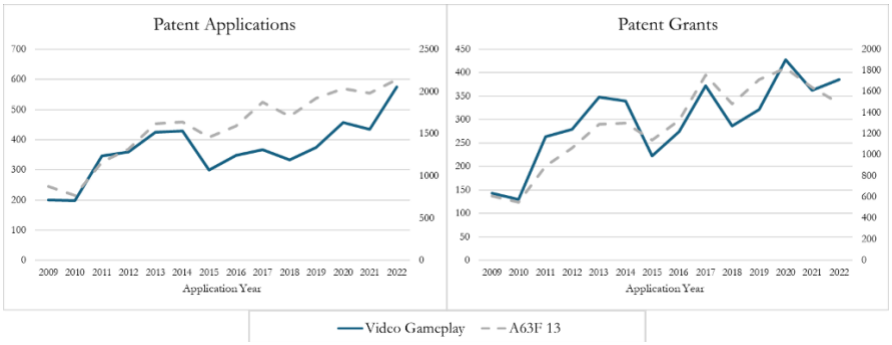

Figure A.1: Video Gameplay and A63F 13 Patents by Application Year

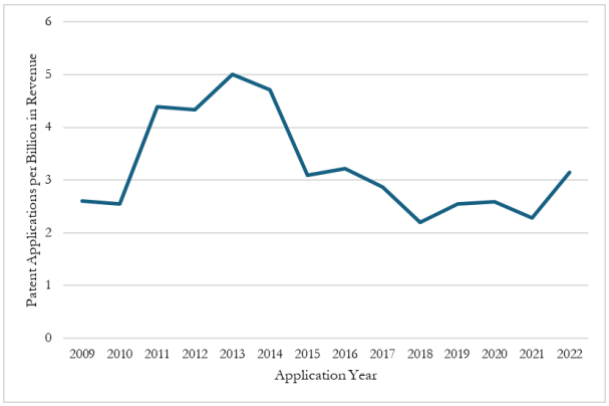

Figure A.2: Video Gameplay Patent Applications Adjusted for Revenue

336. Schwartz, *supra* note 31.

	TP	FP	TN	FN	F1-Score	VG Support	Not VG Support	Accuracy
Parhar	10	9	278	103	0.152	113	287	0.720
Davidsson	13	29	258	100	0.168	113	287	0.678
Custom	65	85	202	48	0.494	113	287	0.668
Classifier	43	15	122	20	0.711	52	148	0.825

Table A.1: Validation Results from Labeled Sample

Although accuracy is a popular metric, F1-scores are often better suited for assessing performance on unbalanced datasets. Consider here, for example, how classifying every patent as "not video gameplay" would be 71.8% accurate.

	VG Applications	A63F 13 Applications	VG Patents	A63F 13 Patents
2009	200	877	143	610
2010	199	769	130	551
2011	347	1162	264	892
2012	360	1321	279	1063
2013	425	1621	348	1290
2014	429	1637	340	1302
2015	300	1462	223	1140
2016	348	1595	275	1328
2017	367	1875	372	1757
2018	334	1704	286	1482
2019	375	1923	322	1712
2020	458	2034	428	1818
2021	434	1981	362	1640
2022	575	2144	385	1486
2023	502	2036	210	949
2024	445	1610	55	274
2025	208	701	3	11

Table A.2: Classification Results Alongside A63F 13 Superset