The Manufactured Dependency:
Engineered Compulsion in Games as a Service and Four Doctrines That Now Reach It

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Abstract

For years, the claim that games built as a service engineer compulsion and profit from it was treated as a cultural grievance with no legal handle. That has changed. This article argues that manufactured dependency, the deliberate engineering of compulsive engagement and its monetization through mechanics structured like gambling, is now actionable across four independent legal vectors: negligent and defective design, consumer protection and deception, gambling aimed at minors, and contract unconscionability. Each vector is independently sufficient, and a single stretch of 2026 produced a jury verdict holding addictive design a substantial factor in a minor's injury. The article then develops a disability axis that rides alongside the four vectors. Rather than forcing a plaintiff through the statutory exclusion for compulsive gambling, it routes through a cleanly covered disability and treats the clinical picture as evidence of harm. It also identifies a judicial estoppel trap. A defendant that invokes the gambling exclusion to defeat a disability claim must characterize its own product as gambling, which is the admission the gambling and consumer protection vectors need. The empirical predicate is not incidental. The evidence indicates that loot box spending, and therefore revenue, concentrates in the players who show problem gambling behavior. The dependence is the revenue engine, not a side effect.

Keywords: manufactured dependency; loot boxes; addictive design; product liability; consumer protection; unconscionability; *Americans with Disabilities Act*; games as a service.

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I. Introduction

Open the financial anatomy of a modern game built as a service and one figure organizes the rest. The evidence indicates that loot box spending, and therefore the revenue drawn from it, concentrates in the minority of players who exhibit problem gambling behavior.[1][2] That is not a description of a business that happens to capture some vulnerable users at the margin. It is a description of a business whose most lucrative revenue is drawn from the vulnerability itself.

Call the design and monetization pattern that produces this result manufactured dependency. The label is precise. A game built as a service can be engineered to produce compulsive engagement through variable reward schedules, sunk cost mechanics, artificial scarcity, and social pressure loops, and that engagement can then be monetized through mechanics, above all the loot box, that resemble gambling in structure and in effect. The dependence is not an unfortunate externality of a fun product. It is the product's revenue engine.

For years this was argued as a moral complaint. Publishers were said to be predatory, players were said to be exploited, and the exchange went nowhere because a grievance without a cause of action does not move a court. This article takes the opposite posture. It argues that manufactured dependency is now actionable, and not through one strained theory but through four independent legal vectors that have matured at the same time: negligent and defective design, consumer protection and deception, gambling aimed at minors, and contract unconscionability. Each is independently sufficient. Together they converge on the same conduct from four directions.

The industry treats the boundary between physical and digital as a lever it can pull in one direction, denying disabled and consumer plaintiffs by turns depending on which framing defeats

1. *See* David Zendle, Rachel Meyer & Harriet Over, *Adolescents and Loot Boxes: Links with Problem Gambling and Motivations for Purchase*, 6 Royal Soc'y Open Sci. 190049 (2019) (finding, among sixteen to eighteen year olds, a link between loot box spending and problem gambling of moderate to large magnitude, larger than the link observed in adults, and concluding that the mechanic may allow companies to profit from adolescents with gambling problems for substantial monetary reward).

2. *See* Stuart Gordon Spicer et al., *Loot Boxes, Problem Gambling and Problem Video Gaming: A Systematic Review and Meta-Synthesis*, 24 New Media & Soc'y 1001 (2021) (reporting a positive association between loot box engagement and problem gambling in twelve of thirteen studies reviewed).

the claim in front of it. This article does not rehearse that showing. It turns to the engine behind the lever. The same industry that draws the line to escape liability engineered the dependence these four vectors now reach.

II. The Manufactured Dependency Thesis

The thesis has three parts. First, compulsion in a game built as a service is frequently designed, not discovered. The mechanics that drive the most intense engagement, randomized rewards delivered on a variable schedule, near miss presentations, escalating streak and login incentives, and limited time events that punish absence, are the same mechanics a behavioral scientist would select to produce persistent, hard to extinguish behavior. Second, that engineered compulsion is monetized through instruments calibrated to the compulsion itself. The loot box is the clearest instance. It sells a randomized outcome for real money and rewards repeated purchase. Third, the revenue does not come evenly from a broad base of satisfied customers. It concentrates in the players least able to stop.

The three parts describe a closed loop. Design produces compulsion, compulsion is monetized, and the monetization data are fed back into the design so that the loop tightens. What distinguishes manufactured dependency from ordinary engagement is not that a game is enjoyable or even that it is habit forming. Many worthwhile things are both. The tell is the deliberate deployment of mechanics modeled on gambling, aimed at a population that includes children, monetized in a way that draws its yield from the most compulsive users. Where those features are present, the harm is not a side effect of the design. It is the design working as intended.

III. The Engine

The loot box is the paradigm case, so the empirical predicate is best built there.

Structurally, loot boxes resemble gambling. A player commits money for a randomized outcome of uncertain value, and the reinforcement architecture borrows from the slot machine. Researchers have concluded that some loot boxes are psychologically akin to gambling.[3]

The mechanic is aimed at children. A prevalence study of top grossing games found that the large majority of games containing loot boxes, roughly ninety four percent on the tested mobile platforms, were rated as suitable for children twelve and older.[4] Exposure is not confined to an adult market that has chosen to gamble. It is built into products marketed to minors.

The correlation with problem gambling is real and, in the population that matters most here, stronger than in adults. In a study of sixteen to eighteen year olds, loot box spending was associated with problem gambling at a magnitude that was moderate to large ($\eta^2 = 0.120$), and larger than the association observed in adult samples.[5] A systematic review synthesizing the literature found a positive association between loot box engagement and problem gambling in nearly every study examined.[6]

The consequence for revenue follows from the same evidence. Loot box spending rises with problem gambling severity, and the researchers who documented the adolescent link concluded that the mechanic may allow companies to profit from young people with gambling problems for substantial monetary reward.[7] A model that drew its revenue evenly from satisfied players would not concentrate its yield in its most compulsive users. The evidence indicates this one does.

Whether that structure satisfies a given jurisdiction's statutory definition of gambling is contested, and in the United States the direct theory has mostly failed. Federal courts applying California law have declined to treat paid loot boxes as illegal slot machines, reasoning that the

3. Aaron Drummond & James D. Sauer, *Video Game Loot Boxes Are Psychologically Akin to Gambling*, 2 Nature Hum. Behav. 530 (2018).

4. David Zendle, Rachel Meyer & Paul Cairns, *The Prevalence of Loot Boxes in Mobile and Desktop Games*, 115 Addiction 1768 (2020).

5. Zendle, Meyer & Over, *supra* note 1. The point is not that loot boxes cause a gambling disorder in the clinical sense, but that the association is measurable, robust across studies, and most pronounced among the young.

6. Spicer et al., *supra* note 2.

7. Zendle, Meyer & Over, *supra* note 1.

randomized virtual prizes are not a thing of value because the platforms' own terms bar players from selling them for cash, and that a purchaser who receives the virtual currency he paid for suffers no cognizable injury.[8] That is why the vector relies on the estoppel route developed below and does not stand or fall on a direct gambling theory. The lesson is not that the gambling characterization is settled. It is that the characterization is live, contested, and consequential, which is what makes forcing it in litigation valuable.

IV. Vector One: Design Liability

The first vector treats the compulsion mechanics as a design defect and a failure to warn.

The theory is no longer hypothetical. In 2026 a California jury found that addictive platform design was a substantial factor in a minor's injury and returned a verdict that included punitive damages.[9] A jury has now been willing to attach liability to the engineering of compulsion, which is the factual heart of this vector.

The doctrinal groundwork was laid before the verdict. In the federal social media products liability litigation, the court allowed design defect and failure to warn claims to proceed past both Section 230 and the First Amendment.[10] The reasoning is what makes it portable. The court distinguished claims aimed at the publication of content supplied by others, which remain immunized, from claims aimed at a defendant's own design of content neutral features, which do not. Where a plaintiff attacks a designed feature that can be made safer without altering any third party content, the duty arises from the defendant's own conduct, and the platform feature

8. *See* Coffee v. Google LLC, No. 20-cv-03901, 2022 WL 94986, at *12 (N.D. Cal. Jan. 10, 2022) (loot boxes are not illegal slot machines under California law because the virtual prizes are not a thing of value under Cal. Penal Code §330b); Mai v. Supercell Oy, 648 F. Supp. 3d 1130 (N.D. Cal. 2023) (same; subjective enjoyment is not a thing of value where the terms of service bar resale); Taylor v. Apple, Inc., No. 20-cv-03906-RS, 2022 WL 35601, at *2–3 (N.D. Cal. Jan. 4, 2022) (dismissing where existing law does not plainly prohibit loot boxes and the plaintiff received the virtual currency purchased). Each rests on Kater v. Churchill Downs Inc., 886 F.3d 784, 788 n.2 (9th Cir. 2018) (a virtual item is not a thing of value where the terms of use bar its sale for cash).

9. Jury Verdict, Social Media Cases, Cal. Super. Ct., L.A. Cnty. (Mar. 25, 2026) (addictive design found a substantial factor in a minor plaintiff's harm; compensatory and punitive damages awarded). Caption, docket, and award figures are to be pinned on the citation verification pass.

10. *In re* Social Media Adolescent Addiction/Personal Injury Products Liability Litigation, 702 F. Supp. 3d 809 (N.D. Cal. 2023).

is treated as a product subject to the ordinary law of defective design.[11] An appellate court has since recognized a duty to warn of, and to consider reasonable alternatives to, addictive design features.[12]

The application to games is direct. A loot box is a content neutral designed feature. It is not the speech of any third party. It is a monetization mechanic the publisher built, and it can be redesigned, disclosed, rate limited, or removed without touching a single line of the game's expressive content. That places it inside the category the courts have allowed through, not inside the category they have immunized. The reasonable alternative design is not exotic. It is the same product with transparent odds, spending limits, and the randomized purchase removed for minors.

The vector has a boundary, and the honest version of the argument states it. Courts will not impose a design duty where the connection between the design and the harm is too attenuated.[13] The theory advanced here does not reach every game a player finds hard to put down. It reaches the deliberate deployment of gambling structured mechanics, monetized in the pattern Part III describes, where a safer alternative design was available and declined.

V. Vector Two: Consumer Protection and Deception

The second vector treats the same conduct as an unfair or deceptive practice.

Here too the theory has produced results. In 2026 a state prevailed against a major platform on a consumer protection and child safety theory, with a substantial monetary judgment.[14] And in the federal litigation, the court largely denied the platform's motion

11. *Id.* The court preserved immunity for algorithmic functions that amount to editorial arrangement of content supplied by others, and required misfeasance rather than mere nonfeasance for claims premised on harm caused by third parties. Those limits are addressed in Part IX.

12. Patterson v. Meta Platforms, Inc., 2025 N.Y. Slip Op. 04385 (App. Div. 2025) (recognizing an addictive design duty and the relevance of reasonable alternative designs such as removing autoplay, infinite scroll, and engagement maximizing notifications).

13. Modisette v. Apple, Inc., 30 Cal. App. 5th 136 (2018) (declining to impose a duty on a device maker for a feature usable while driving, where the intervening conduct broke the causal chain).

14. State of New Mexico ex rel. Torrez v. Meta Platforms, Inc., No. D-101-CV-2023-02838 (1st Jud. Dist. Ct., Santa Fe Cnty., N.M., verdict returned Mar. 24, 2026) (special verdict finding Meta liable for willful violations of the

to dismiss the state attorneys general consumer protection claims, allowing the theory that engagement maximizing design was deceptively presented to proceed.[15]

The deception in a game built as a service is not hidden once it is named. Odds on randomized purchases are frequently obscured or omitted. Prices are presented in laundered virtual currencies that break the link between a click and a dollar. Limited time offers manufacture urgency. Interfaces are arranged to make spending frictionless and refunds difficult. These are the recognized species of the dark pattern, a design that steers a user toward a choice the user would not make with full information and unhurried attention.[16] Deployed against adults, they support an unfairness theory. Deployed against children, who cannot supply the informed and deliberate judgment the practices are engineered to bypass, they support a stronger one.

VI. Vector Three: Gambling Aimed at Minors and the Estoppel Trap

The third vector confronts the gambling characterization directly, and then turns its contested status into an advantage.

The empirical predicate from Part III does the first half of the work. Mechanics structured like gambling, aimed at products marketed to children, drawing their revenue from the most compulsive users, are the factual profile of a gambling harm inflicted on minors. Whether that profile satisfies a given jurisdiction's statutory definition of gambling is contested, as the Belgian and Dutch divergence shows. The article does not need to win that fight on foreign authority. It

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New Mexico Unfair Practices Act on both the unfair or deceptive trade practice prong and the unconscionable trade practice prong, with 37,500 willful violations found under each prong at a civil penalty of $5,000 per violation, for aggregate exposure of $375,000,000); Order Correcting Verdict Form (Mar. 26, 2026) (Biedscheid, C.J.) (correcting a clerical error in the jury's answer to Question 7 to conform to its answer to Question 3). This is a distinct theory from the design verdict noted in Part IV, and the two should not be conflated.

15. *In re* Social Media Adolescent Addiction/Personal Injury Products Liability Litigation, No. 4:22-md-03047-YGR (N.D. Cal.) (Gonzalez Rogers, J.) (orders denying in relevant part the motions to dismiss the state attorneys general consumer protection claims).

16. *See* Fed. Trade Comm'n, *Bringing Dark Patterns to Light* (2022) (staff report cataloguing manipulative design practices in consumer interfaces). Full citation to be confirmed on the citation verification pass.

needs only to make the characterization matter, and here the federal disability statute supplies the mechanism.

The Americans with Disabilities Act excludes certain conditions from the definition of disability. Among them is compulsive gambling.[17] A defendant facing the disability axis developed in Part VIII has an obvious temptation. It can argue that the plaintiff's condition is, in substance, compulsive gambling, and therefore excluded. But to run that argument, the defendant must characterize the very product at issue as gambling. That is the admission the gambling and consumer protection vectors need.

This is the estoppel trap. A defendant cannot coherently tell a disability court that its product produces compulsive gambling, and tell a gambling regulator or a consumer protection court that its product is not gambling at all. Judicial estoppel exists to prevent exactly that maneuver, the assertion of one position to defeat a claim and its opposite to defeat another. The defendant is put to an election. Concede the product is not gambling, and the exclusion falls away, opening the disability axis. Assert that it is gambling, and the concession feeds the gambling to minors and consumer protection vectors and invites the regulatory characterization the industry has spent years resisting. The contested status of loot box gambling, which looks like a weakness in a naive framing, is what gives the trap its force.

VII. Vector Four: Unconscionability and Engineered Lack of Choice

The fourth vector is contractual. The relationship between a player and a publisher is governed by an adhesive end user agreement, presented on a take it or leave it basis and amended unilaterally over the life of the service. Such agreements are the classic setting for unconscionability, which asks whether a contract was both procedurally defective in its formation and substantively one sided in its terms.[18]

17. 42 U.S.C. §12211(b)(2) (excluding compulsive gambling, kleptomania, and pyromania from the definition of disability).

18. *See* Comb v. PayPal, Inc., 218 F. Supp. 2d 1165 (N.D. Cal. 2002) (finding an online adhesion contract both procedurally and substantively unconscionable). A California anchor on the sliding scale between the procedural and substantive prongs is to be added on the citation verification pass.

Manufactured dependency does something specific to the procedural prong. Procedural unconscionability is usually a story about the moment of formation: unequal bargaining power, absence of meaningful choice, terms buried in a click. Engineered compulsion extends that story across time. Choice is not merely absent at signup. It is progressively engineered away as the player is habituated, as sunk costs in purchases and progress accumulate, and as the social ties built inside the service raise the cost of leaving. Later amendments to the agreement, the ones that expand the publisher's rights and narrow the player's, are then accepted under conditions the publisher itself manufactured. The absence of meaningful choice is not a static defect in the contract. It is a condition the counterparty produced on purpose.

The boundary cases mark the vector's limits and keep it honest. Breaching a term of service is not, by itself, a copyright violation or a crime; it becomes infringement only when the broken term is tied to one of the exclusive rights of the copyright owner.[19] And where courts have found infringement in the server context, the violation turned on circumvention of an access control and the enabling of unauthorized copies, not on the mere existence of a contractual breach.[20] These cases cut both ways, and the article uses them honestly. They forbid the industry from recharacterizing an ordinary contract dispute as piracy, and they confirm that the contract is where this vector lives. The one sidedness of that contract is not cured by the click that formed it, least of all a click obtained under engineered compulsion.

VIII. The Disability Axis

Running alongside the four vectors is a disability claim, and its path has to be chosen with care, because the obvious route is a trap and the real obstacle is not the one it first appears to be.

19. MDY Indus., LLC v. Blizzard Entm't, Inc., 629 F.3d 928 (9th Cir. 2010).
20. Davidson & Assocs. v. Jung, 422 F.3d 630 (8th Cir. 2005).

The obstacle is not the statute's exclusion of current illegal drug use.[21] Gaming is legal. Invoking that carve out against a gaming related condition is a category error, and it should be named as a red herring rather than argued on the merits.

The real obstacle is the exclusion of compulsive gambling.[22] A defendant will try to fold a gaming related condition into that exclusion. Three routes get past it, and they are strongest deployed together.

The first route does not fight the exclusion at all. It routes the claim through a disability that is cleanly covered, most naturally attention deficit hyperactivity disorder, and frames the harm as differential. Mechanics engineered to defeat impulse regulation fall hardest on players whose disability is impulse regulation. On this route the clinical picture of disordered gaming is evidence of the harm the design inflicts, not the disability the plaintiff must establish. The plaintiff never has to walk through the gambling exclusion, because the covered disability is something else.

The second route meets the exclusion and distinguishes it. Gaming disorder, as the World Health Organization defines it, is a distinct diagnosis from pathological gambling. The statutory exclusion names compulsive gambling. By its own terms it does not reach a separately defined condition, and the defendant who insists that it does must argue that gaming disorder simply is gambling, which returns us to the estoppel trap.

The third route is that trap, invoked from the disability side. If the defendant characterizes the plaintiff's condition as compulsive gambling to win the exclusion, it has characterized its own product as gambling, and the gambling and consumer protection vectors take the concession. The disability axis and the gambling vector are two faces of one coin, joined at the estoppel trap. That is why they are strongest pleaded together.

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21. 42 U.S.C. §12210 (excluding an individual currently engaging in the illegal use of drugs).

22. 42 U.S.C. §12211(b)(2). The World Health Organization recognizes gaming disorder as a distinct diagnosis. World Health Org., *International Classification of Diseases* 6C51 (11th rev. 2022) (Gaming disorder).

IX. Objections

Several objections deserve a direct answer.

The first is scope. If manufactured dependency is actionable, does every engaging game become a lawsuit? No. The theory is bounded by the same features that define it: mechanics structured like gambling, deployed in products that reach children, monetized in the concentration pattern Part III documents, where a reasonable alternative design was available and declined. A game that is merely absorbing, with no randomized purchase and no revenue drawn disproportionately from the compulsive, does not fit the profile and is not the target.

The second is the fun objection. The design vector, it is said, would let courts second guess what makes games enjoyable. It would not, because the controlling authority reaches content neutral designed features that can be altered without touching expressive content. The claim is not that the game is too good. It is that a specific monetization mechanic, severable from the game itself, was engineered to exploit compulsion and could have been built safely.

The third concerns the two populations. The child gambling harm and the disability harm involve different people and different doctrines, and the article keeps them separate. It joins them at exactly one point, the estoppel trap, and nowhere else. The disability plaintiff need not be a child, and the child harmed by loot box mechanics need not be disabled.

The fourth is Section 230. The design and consumer protection vectors survive it, not by wishing it away, but by staying on the side of the line the courts have drawn between a defendant's own design conduct and the publication of content supplied by others. Where a claim strays across that line, to the arrangement of that content, it should be abandoned, not stretched.

The fifth is that loot box gambling is contested, as the Dutch reversal shows. Conceded, and built into the design of the argument. The gambling vector does not rest on a foreign holding. It rests on the empirical predicate and on the estoppel trap, both of which operate whether or not a given regulator has yet called the mechanic gambling.

X. Conclusion

The grievance has doctrine now. What was for years a complaint that publishers engineer compulsion and profit from the vulnerable has become a set of claims a court can hear. Four vectors, each independently sufficient, converge on the same conduct: the design that builds the compulsion, the deception that sells it, the gambling structure aimed at minors, and the one sided contract that formalizes it. A disability axis rides alongside them, and the industry's own defensive characterizations, that the mechanic is gambling, that the product is licensed and not owned, that the environment is unsafe, are being turned into admissions.

The pattern is of a piece. The same industry that draws the line between physical and digital to escape liability engineered the dependence these vectors reach. The line is the shield. The dependence is the thing it was raised to protect. This article has tried to show that the shield is thinner than it looks, and that the thing behind it is finally in range.