Gamification
& The Dark Arts

How games shape motivation, and how products borrow the same tricks.

AGENDA

Today’s quest

01	Press start
02	Why we play
03	Before apps: loyalty and status
04	The Octalysis map
05	Gamification done well
06	The Dark Arts
VIDEO	The gamer’s slot machine
07	Behavioural science
08	Dark patterns and biases
09	Ethics and takeaways

PRESS START

By the end of today, you can...

Explain why games motivate us

Intrinsic and extrinsic motivation, player types and flow.

Analyse any product

Map its mechanics onto the eight Octalysis core drives.

Spot the Dark Arts

Reinforcement schedules, cognitive biases and dark patterns.

Use it responsibly

Apply these ideas outside games: in your work, projects and habits.

PRESS START

Gamification ≠ games

> “Gamification is the craft of deriving all the fun and engaging elements found in games and applying them to real-world or productive activities.”
>
> A “human-focused design” process that optimizes human motivation in a system, as opposed to pure efficiency.
>
> Yu-kai Chou, Actionable Gamification

WHY WE PLAY

Two kinds of motivation

Intrinsic

Comes from within: interest, values, enjoyment.

Self-sustaining and linked to creativity, exploration and deeper engagement.

Slower to build and harder to trigger at first.

Extrinsic

Comes from outside: money, trophies, recognition.

Fast, but often temporary. It fades when the rewards stop.

Risk: overjustification. Too many rewards can kill the fun.

Self-Determination Theory: we stay motivated when we feel **autonomy**, **competence** and **relatedness**.

WHY WE PLAY

Not everyone plays for the same reason

MASTERY

Achiever

Wants to learn, improve and beat challenges.

AUTONOMY

Free Spirit

Wants to explore and create freely.

RELATEDNESS

Socialiser

Wants to connect and belong.

PURPOSE

Philanthropist

Wants to help others, with no reward needed.

REWARDS

Player

Will do what it takes to earn the prize.

CHANGE

Disruptor

Tests the system's limits, for better or worse.

Hexad player types: Andrzej Marczewski (2015)

WHY WE PLAY

Why kids say they play

A survey of 1,254 students aged 12–14 in South Carolina and Pennsylvania.

- **Fun**
- **Mastery**
- **Stress relief**
- **Socializing**
- **Self-expression**
- **Learning**
- **Competition**
- **Escape**

Source: Olson, C. K. (2010). Review of General Psychology, 14(2), 180–187

WHY WE PLAY

Flow: between anxiety and boredom

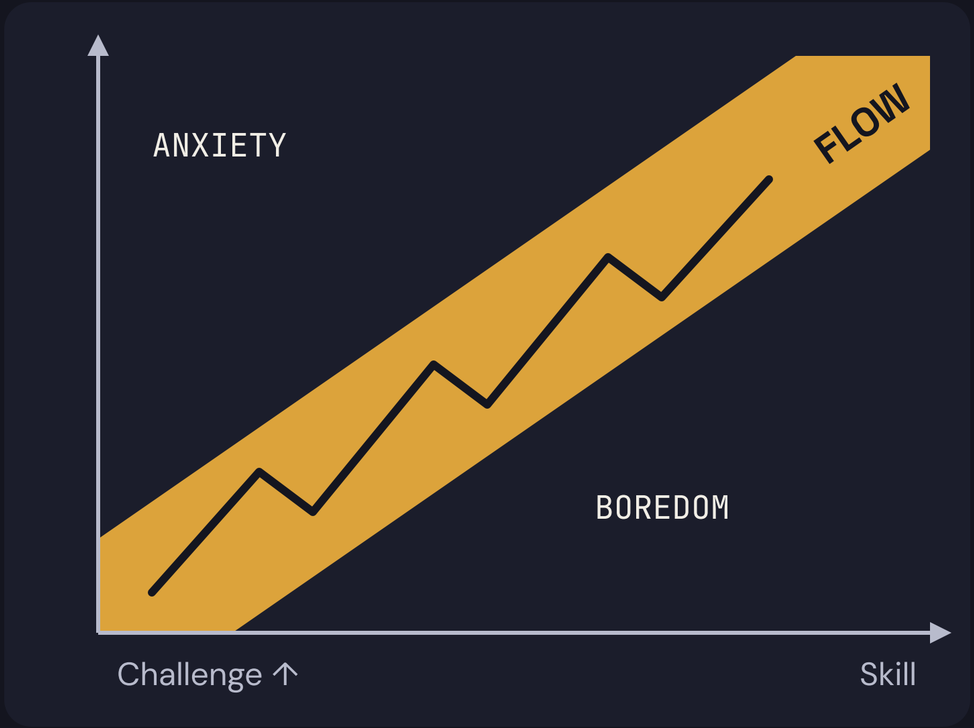
01 Clear goals

02 Direct feedback

03 No distractions

04 Challenge grows with skill

05 Tension and release



Mihaly Csikszentmihalyi, Flow: The Psychology of Optimal Experience (1990)

BEFORE APPS

Loyalty programs were the first gamification

1800s

Cities grow

Local merchants compete to keep regular customers.

Punch cards

Buy 10, get 1 free

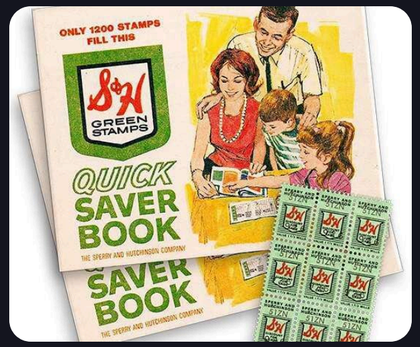
A simple 10:1 ratio that is still everywhere today.

Trading stamps

S&H Green Stamps

Collect stamps, fill books, trade them for goods: a virtual currency.





WHAT IT DID TO US

- Collecting for its own sake
- Over-reliance on discounts
- Loss of value awareness

BEFORE APPS

Then status beat free stuff

1981

American Airlines launches AAdvantage, the first big frequent-flyer program. United and TWA follow.

Airlines learn that loyalty is about status, not free flights.



Shorter lines and upgrades

Cheap for the business, priceless for the customer.

Exclusivity and early access

Fashion brands give top clients first pick of new collections.

Virtual rewards

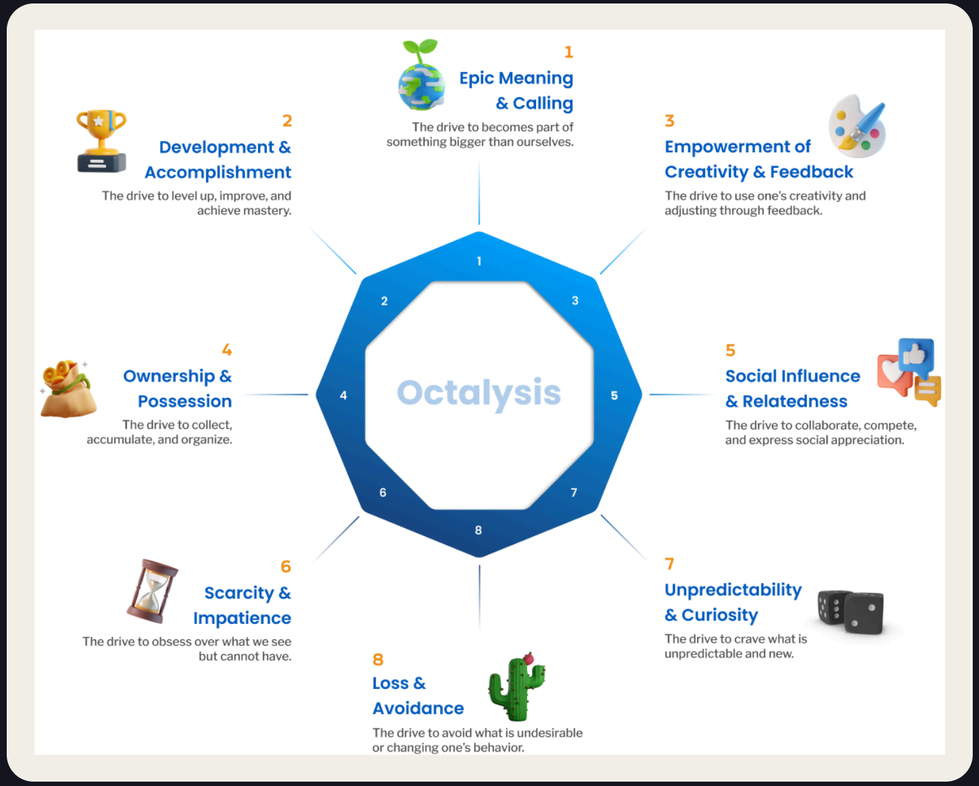
Tiers, badges, “Gold member”: status you can show.

Brands and influencers

A whole industry now runs on status and attention.

THE OCTALYSIS MAP

Eight core drives behind every engaging system



White Hat · CD1–3

Epic meaning, accomplishment, creativity and feedback

Feels empowering and fulfilling.

In between · CD4–5

Ownership and possession, social influence

Can go either way.

Black Hat · CD6–8

Scarcity, unpredictability, loss and avoidance

Feels urgent, sometimes obsessive.

Framework: Yu-kai Chou, Actionable Gamification (2015) · octalysisgroup.com

WHITE HAT DRIVES

You feel powerful and in control



CD1

Epic Meaning & Calling

"I'm part of something bigger."

Narratives, missions, a chance to contribute.

e.g. Wikipedia, open-source projects, Duolingo's free education for everyone

CD2

Development & Accomplishment

"I'm getting better."

Points, badges, leaderboards, levels.

e.g. Fitbit step badges, LinkedIn profile completion, game trophies

CD3

Empowerment of Creativity & Feedback

"My choices matter."

Open-ended tools and fast feedback.

e.g. Minecraft, The Sims, Canva

IN-BETWEEN DRIVES

What you own, and who’s watching

CD4

Ownership & Possession

“It’s mine, so I want to grow it.”

Collections, virtual currencies, customisation.

e.g. Pokémon Go, Animal Crossing islands, loyalty stamps

CD5

Social Influence & Relatedness

“Others are helping, watching or competing.”

Sharing, likes, teams, leaderboards.

e.g. Strava, Facebook likes, team multiplayer games

BLACK HAT DRIVES

Powerful, urgent and risky



CD6

Scarcity & Impatience

“I can’t have it yet.”

Limited offers, exclusive rewards, waiting gates.

e.g. Candy Crush lives, flash sales, invite-only launches

CD7

Unpredictability & Curiosity

“What happens next?”

Random rewards, twists, mystery.

e.g. Loot boxes, gacha games, Tinder swipes

CD8

Loss & Avoidance

“I don’t want to lose this.”

Streaks, countdowns, penalties for inactivity.

e.g. Duolingo streaks, expiring trials, discount timers

They work best in the short term, and burn users out in the long term. This is where the Dark Arts begin.

DONE WELL · 1 OF 5

Duolingo

Language learning built like a mobile game.

WHAT IT DOES

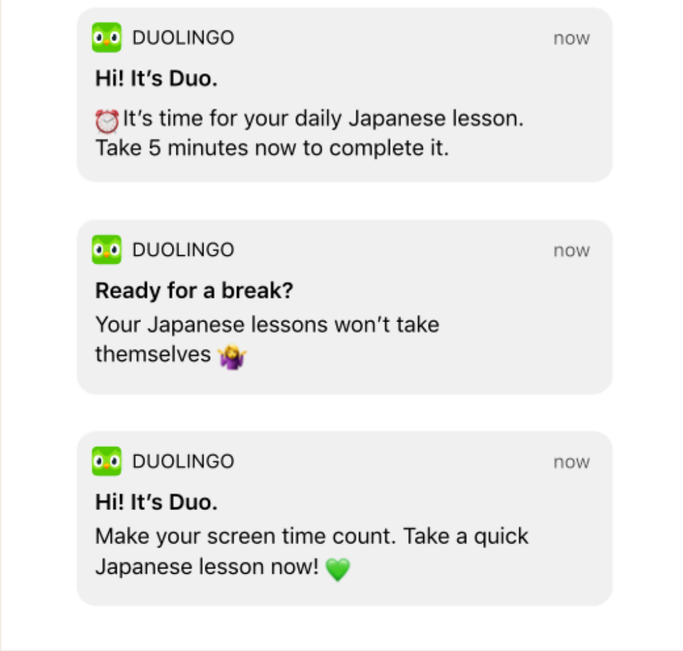
- ✓ Daily streaks with growing rewards
- ✓ Funny, persistent reminders
- ✓ Hidden rewards: chests, gems, badges
- ✓ XP and weekly leagues
- ✓ Lessons tuned to your progress

CD2 White Hat · Accomplishment

CD5 In between · Social

CD7 Black Hat · Unpredictability

CD8 Black Hat · Loss & avoidance



DONE WELL · 2 OF 5

Brilliant

Maths, science and logic through hands-on puzzles.

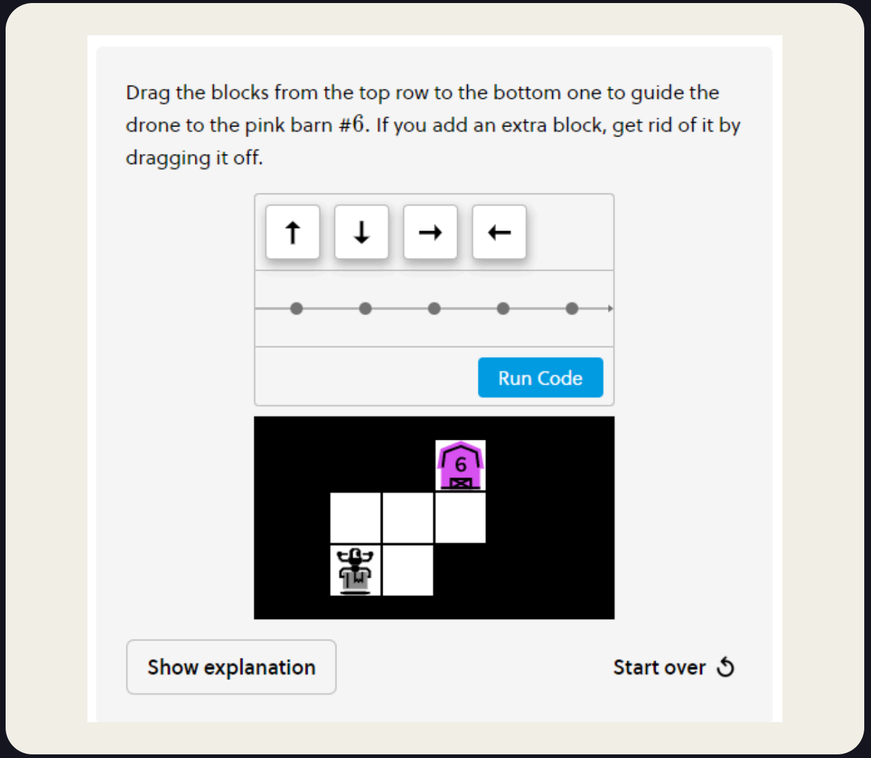
WHAT IT DOES

- ✓ Problems split into small interactive chunks
- ✓ Animated, hands-on modules
- ✓ A clear map of your course progress
- ✓ Daily streaks

CD2 White Hat · Accomplishment

CD3 White Hat · Creativity & feedback

CD7 Black Hat · Curiosity



DONE WELL · 3 OF 5

Khan Academy

Free, world-class education for anyone, anywhere.

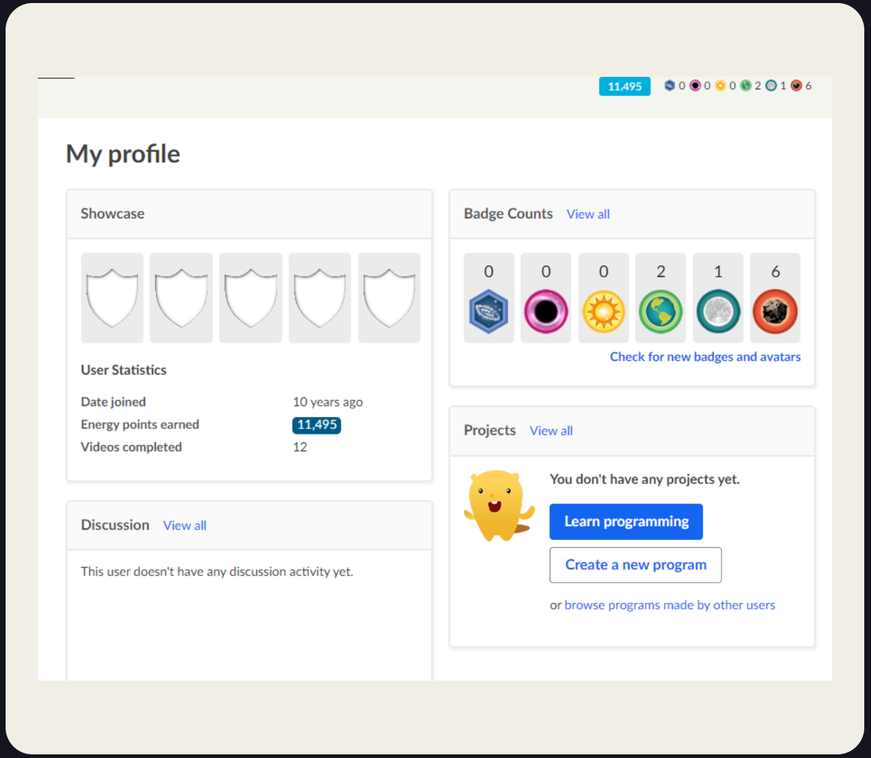
WHAT IT DOES

- ✓ Badges and energy points
- ✓ Courses broken into small steps
- ✓ Progress overview and stats
- ✓ Mastery challenges
- ✓ Leaderboards

CD1 White Hat · Epic meaning

CD2 White Hat · Accomplishment

CD5 In between · Social



DONE WELL · 4 OF 5

Habitica

Your to-do list, turned into a role-playing game.

WHAT IT DOES

- ✓ Finish tasks to earn XP, gold and gear
- ✓ Skip a daily and your avatar loses health
- ✓ Parties, guilds and shared boss fights



Habitica: Gamify Your Life
youtu.be/hgdeJnSili0

CORE DRIVES

CD2 · WHITE HAT
Accomplishment

CD5 · IN BETWEEN
Social influence

CD8 · BLACK HAT
Loss & avoidance

DONE WELL · 5 OF 5

McDonald’s: “Mach keinen Mist”

A 2023 anti-littering campaign inside the German McDonald’s app.

WHAT IT DOES

- ✓ Mini-game: sort the litter out of a city
- ✓ The litter includes McDonald’s own packaging
- ✓ Raises awareness in a light, playful way
- ✓ Players can win vouchers

CD1 White Hat · Epic meaning

CD2 White Hat · Accomplishment

CD7 Black Hat · Unpredictability



DONE WELL

The common toolkit

- Virtual currency
- Progress bars
- Badges
- Levels
- Leaderboards
- Streaks
- Challenges
- Mastery
- Avatars and skins
- Gifts and trading

WHERE IT GOES WRONG

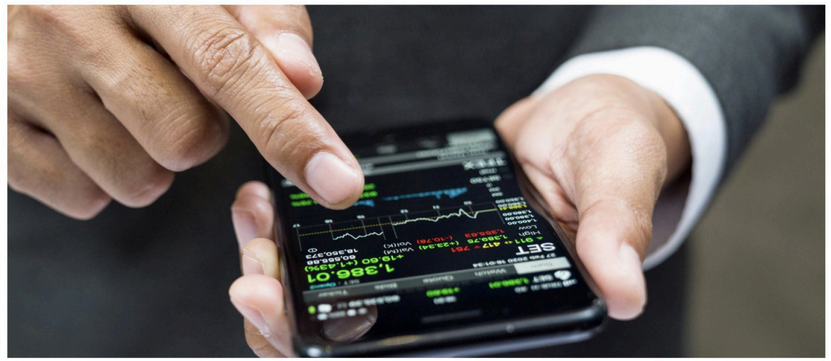
The Dark Arts

Same mechanics, different goal: the business wins and the user loses.

THE DARK ARTS · 1 OF 3

Robinhood: trading as a game

Game Over: Robinhood Pays $7.5 Million to Resolve “Gamification” Securities Violations



$7.5M

Massachusetts settlement, January 2024

Digital confetti
Trades celebrated like a casino win.

Free-stock lottery
A random free share, revealed like a scratch card.

Nudges to trade more
Push notifications and “top movers” lists.

THE DARK ARTS · 2 OF 3

Temu: shopping disguised as a game

In-app games

Fishland and Farmland pay out discounts and “free” items.

Pick your prize first

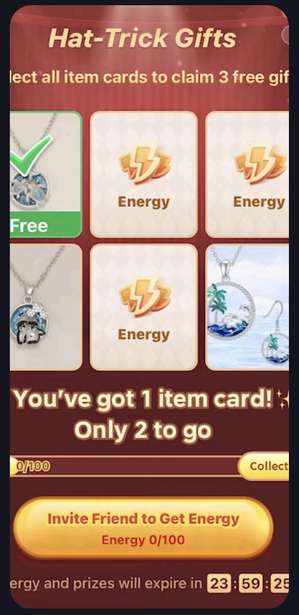
Choosing the reward up front makes you feel invested.

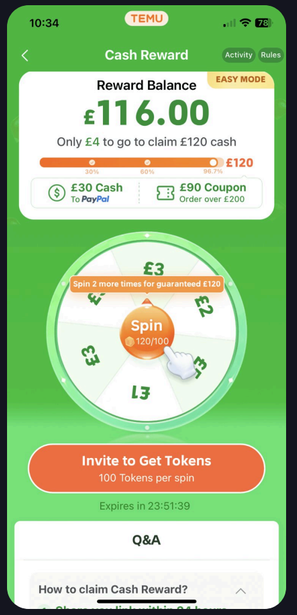
Invite to continue

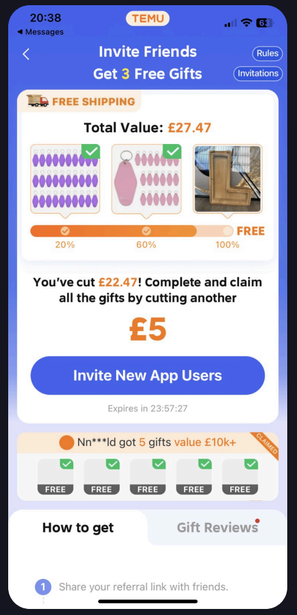
Progress stalls until you share, so users become marketers.

“Only 2 to go”

Countdowns and nearly-full bars keep you playing.







How to Win Fishland on TEMU
youtu.be/zYRM6omTj9w

THE DARK ARTS · 3 OF 3

Uber: gamifying the workforce

The players here aren’t customers. They’re drivers, and the game is their job.

Earnings goals

Log off near a target and the app tells you how close you are.

Forward dispatch

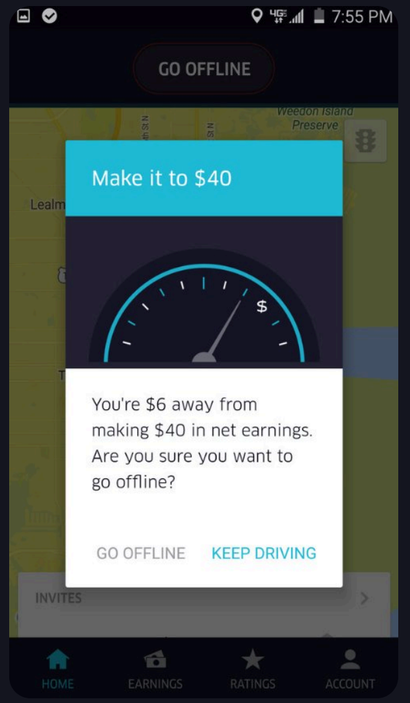
The next ride arrives before this one ends, like autoplay.

Tiers and points

The Uber Pro rewards program (2018) unlocks perks by status.

Badges and ratings

Constant scores that track efficiency and progress.



Source: Noam Scheiber, “How Uber Uses Psychological Tricks to Push Its Drivers’ Buttons”, The New York Times, 2017

INTRO VIDEO

The hardcore gamer’s slot machine



Destiny: The Hardcore Gamer’s Slot Machine

The Point

youtu.be/g79dWuqXe5o

WATCH FOR

- Random loot drops
- Near-misses
- The “one more run” feeling

BEHAVIOURAL SCIENCE

Why we act the way we do

Psychology, sociology, economics and more: what we do, and the hidden processes behind it.

Decision-making

How choices are made, and how they can be steered.

Social behaviour

How we act in groups and around others.

Cognitive biases

Systematic thinking errors that make us predictable.

Learning and habits

How rewards and repetition shape what we do.

BEHAVIOURAL SCIENCE

Two ways we learn

Classical conditioning

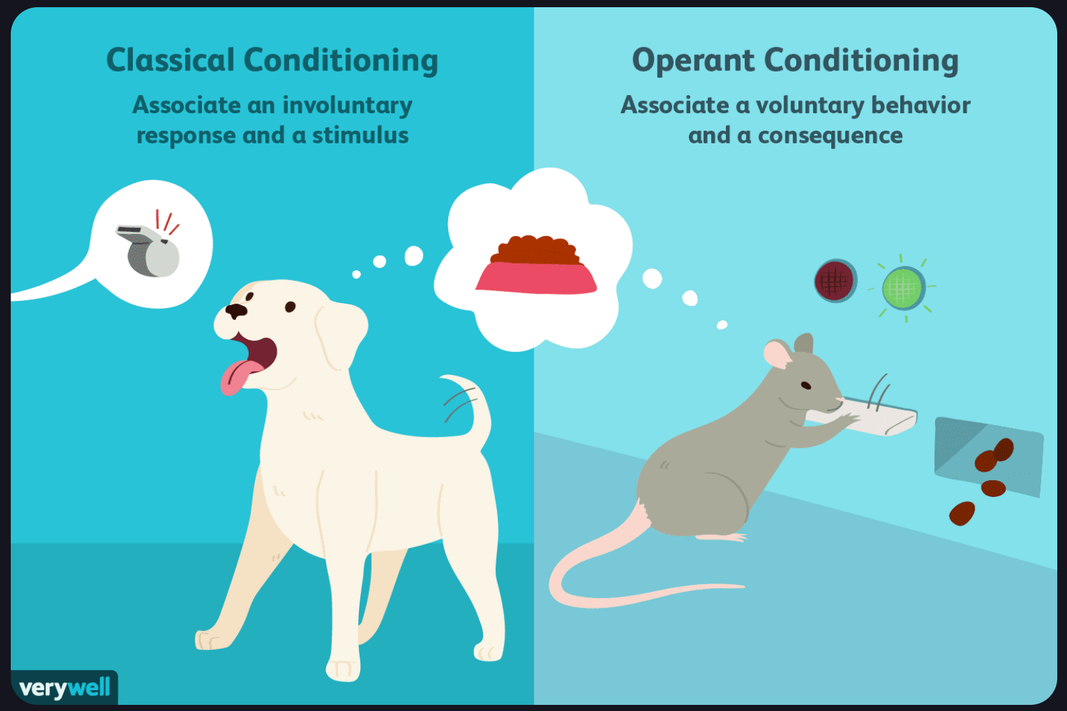
Learning by association.

Automatic responses. A neutral signal comes to predict something we already react to.

Operant conditioning

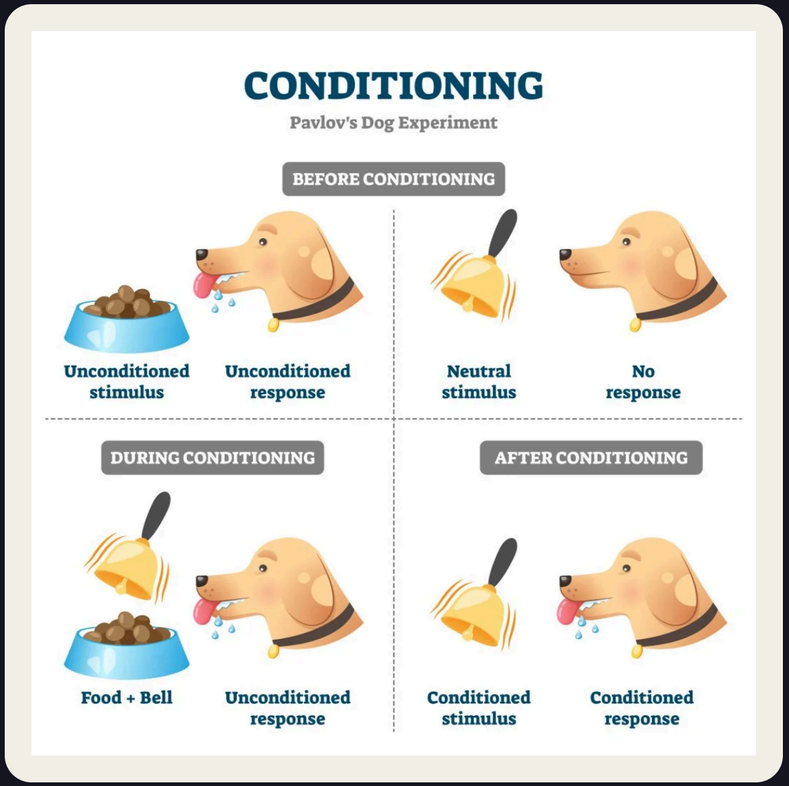
Learning by consequences.

Voluntary actions, made more or less likely by rewards and punishments.



CLASSICAL CONDITIONING

Pavlov’s bell



Ring a bell every time food arrives. Soon the bell alone makes the dog drool.

IN GAMES AND APPS

- The level-up chime
- The loot-drop sparkle
- The notification ping
- Horror games breaking the cue

OPERANT CONDITIONING

Skinner’s box: consequences shape behaviour

	+ ADD SOMETHING	- TAKE SOMETHING AWAY
Reinforcement behaviour goes up	**Positive reinforcement** XP, loot or confetti for finishing a quest.	**Negative reinforcement** The nagging reminders stop once you do your lesson.
Punishment behaviour goes down	**Positive punishment** Damage, a fail screen or a penalty.	**Negative punishment** Lose your streak, your lives or your items.

Watch out, overjustification: reward something people already enjoy, and they may stop doing it for fun.

REINFORCEMENT SCHEDULES

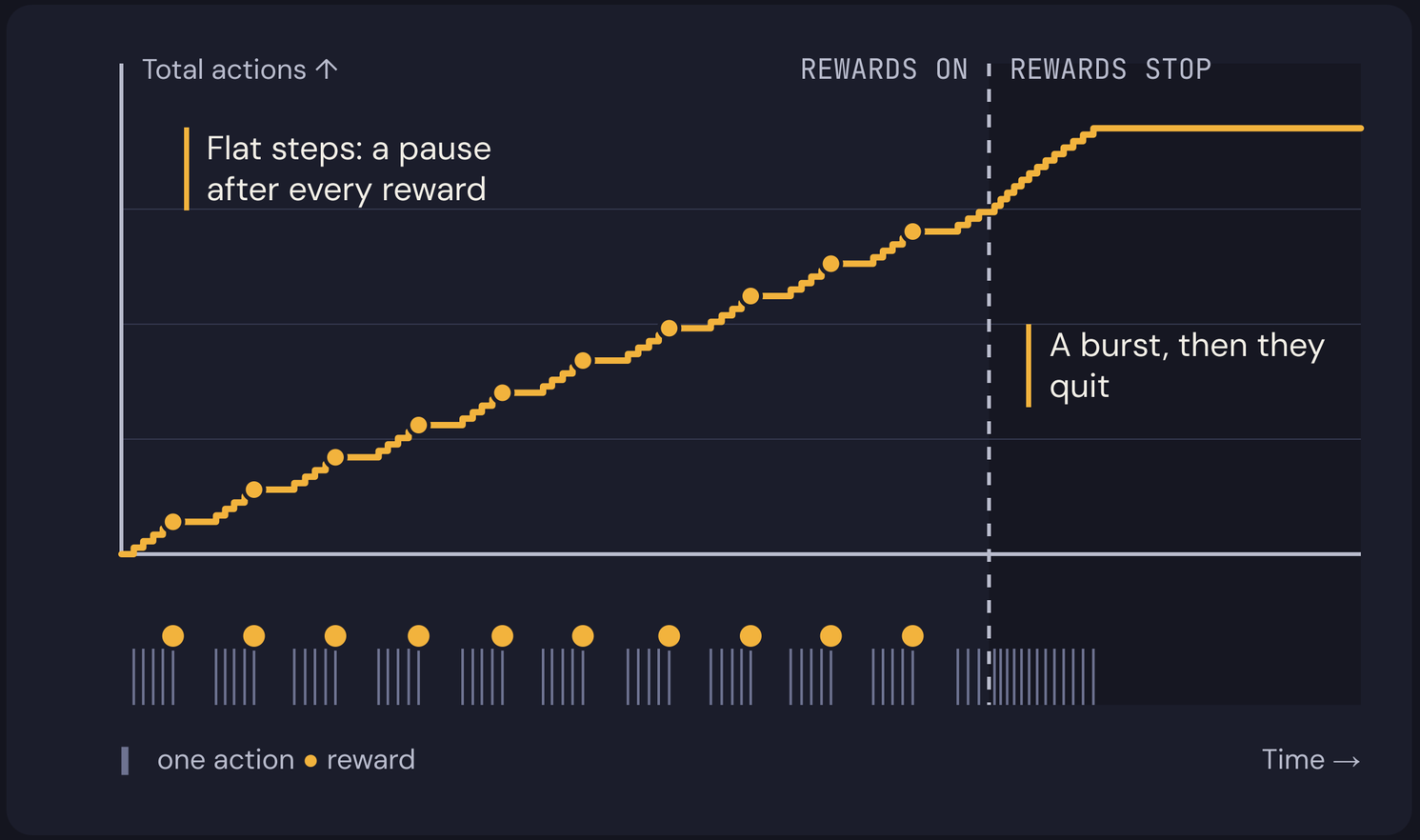
When does the reward come?

	FIXED · PREDICTABLE	VARIABLE · UNPREDICTABLE
Ratio after a number of actions	Every 10th coffee free. Crafting, quest rewards. `High rate · pause after reward`	Slot machines, loot drops, social feeds. `Highest rate · hardest to quit`
Interval after an amount of time	Daily login rewards, weekly events, cooldowns. `Lowest rate · spikes at the deadline`	Pop quizzes, fishing, random encounters. `Steady rate · persistent`

Video: “Schedule of reinforcement” · youtu.be/rst7dIQ4hL8

REINFORCEMENT SCHEDULES · 1 OF 4

Fixed ratio: every 5th action pays



THE RULE

A reward after a set number of actions.

Here: every 5th action. You always know how far away the next one is.

IN GAMES AND APPS

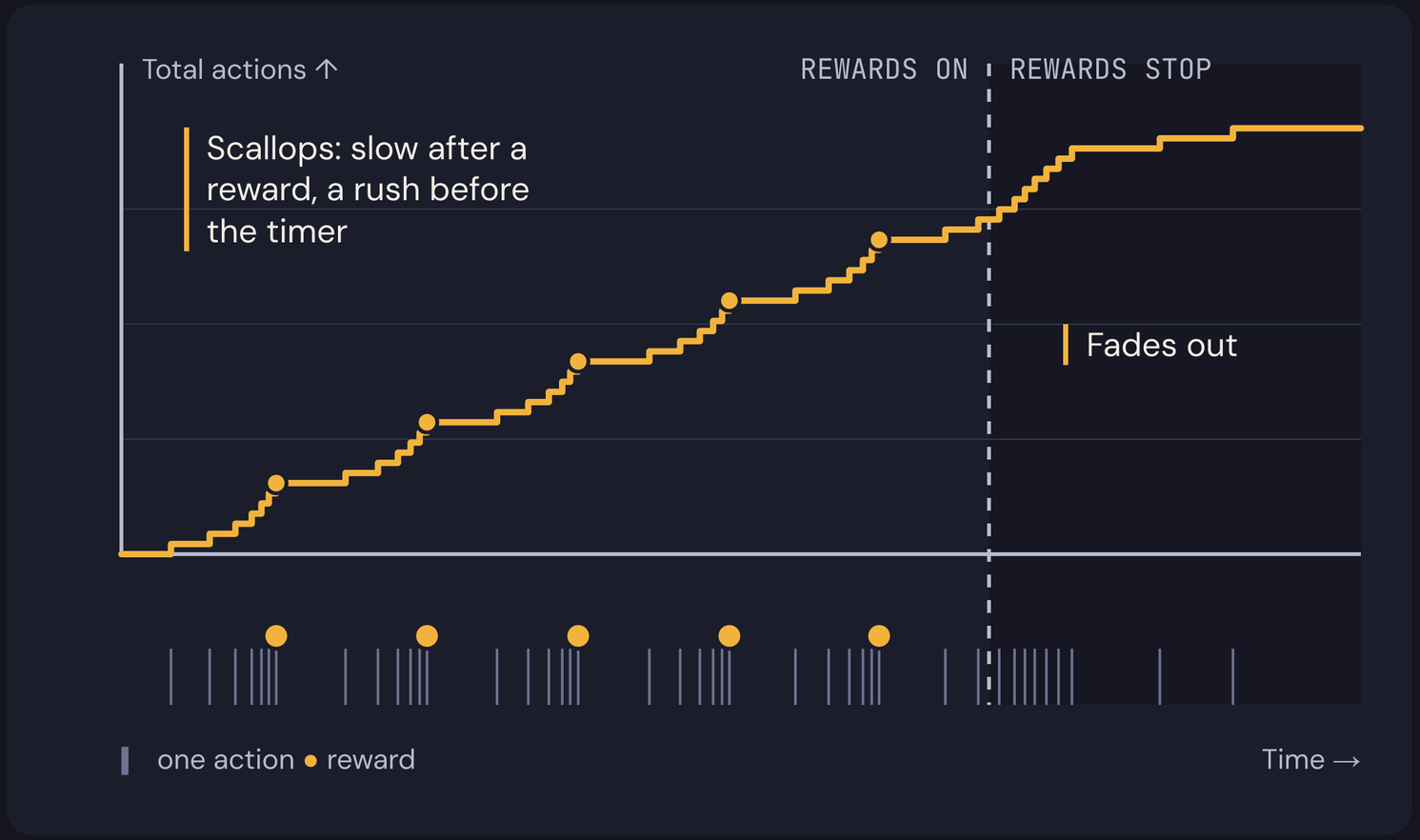
Crafting (10 pelts = 1 armour), quest counters, every 10th coffee free.

+ High rate, easy to understand

– Pauses after each reward; stops fast when rewards stop

REINFORCEMENT SCHEDULES · 2 OF 4

Fixed interval: the clock decides



THE RULE

The first action after a set time pays.

Here: a fixed timer. Acting early earns nothing, so people wait.

IN GAMES AND APPS

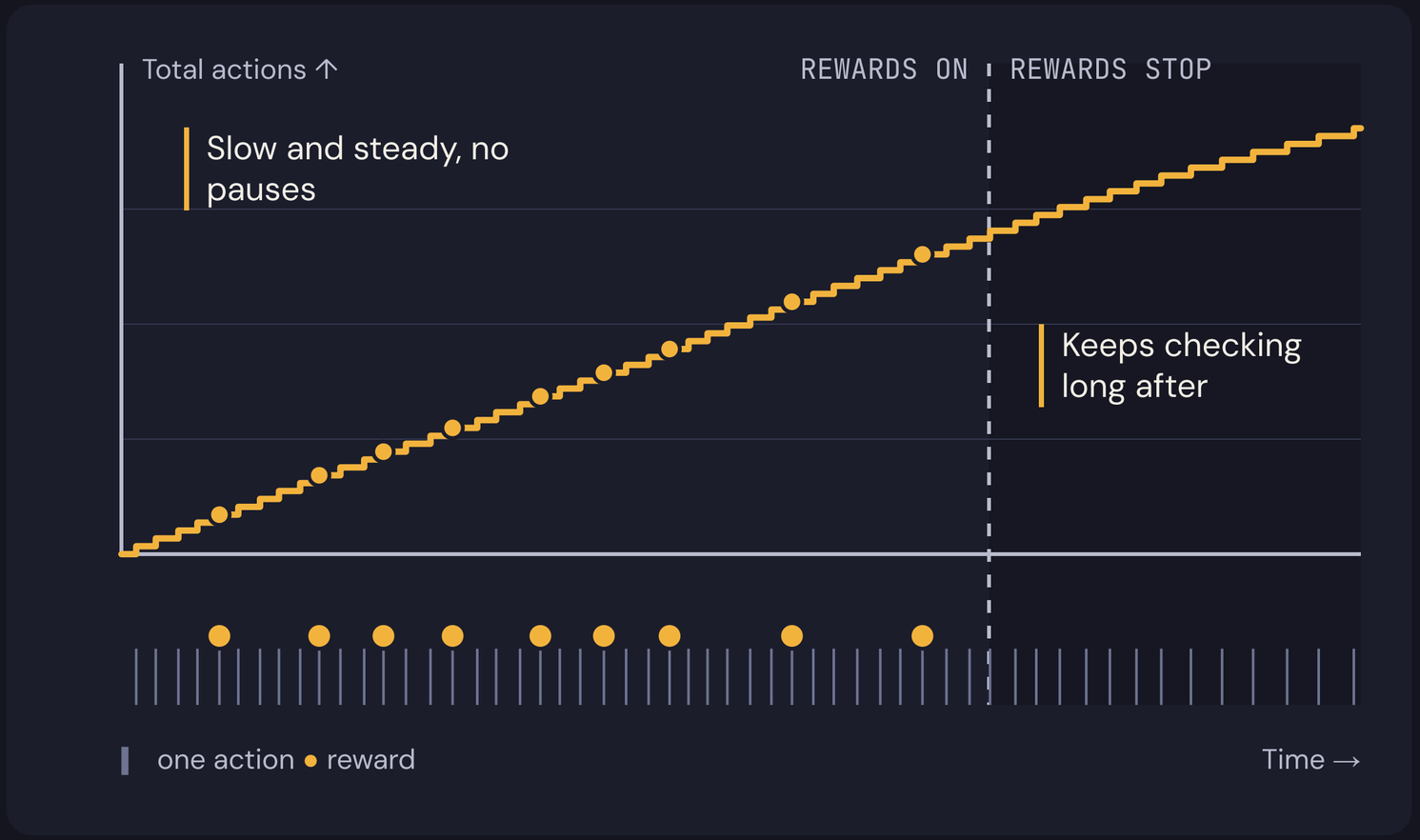
Daily login rewards, weekly events, cooldowns, farming timers.

+ Predictable, good for building habits

– Lowest effort; people leave right after collecting

REINFORCEMENT SCHEDULES · 3 OF 4

Variable interval: a random wait



THE RULE

The first action after a random wait pays.

Here: anywhere from a short to a long wait. Checking now and then is the best strategy.

IN GAMES AND APPS

Pop quizzes, fishing, random encounters, checking for new messages.

+ Steady, persistent behaviour

– Harder to tune; waiting can frustrate

REINFORCEMENT SCHEDULES · 4 OF 4

Variable ratio: the slot machine



THE RULE

A random number of actions pays.

Here: about 1 in 5 on average, but never which one. The next pull might be it.

IN GAMES AND APPS

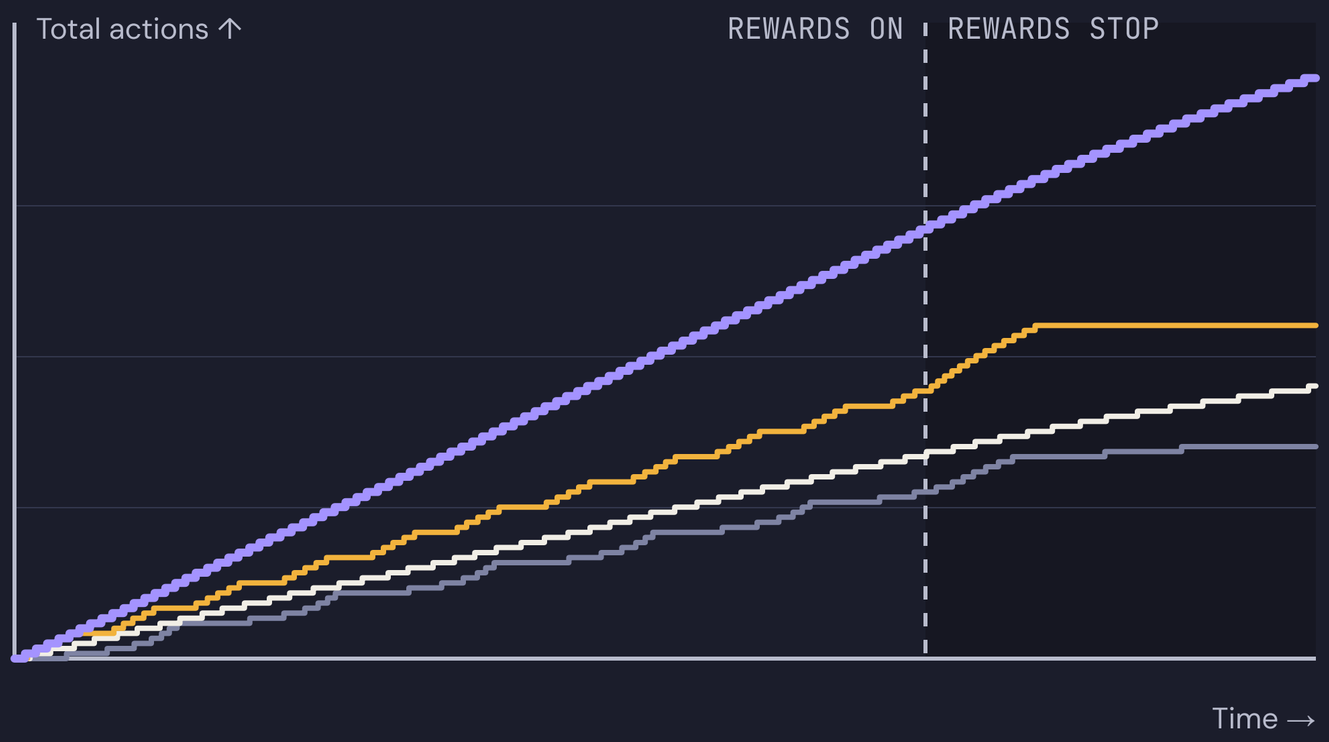
Slot machines, loot drops, gacha, social feeds.

+ Highest, most persistent engagement

- Gambling-like; anxiety and compulsion

REINFORCEMENT SCHEDULES · COMPARED

Same time, four rules



Illustrative curves, after the cumulative records in Ferster & Skinner, *Schedules of Reinforcement* (1957).

Variable ratio
Most effort, and it never stops

Fixed ratio
Fast bursts, quits when rewards stop

Variable interval
Slow and steady, very persistent

Fixed interval
Least effort, last-minute rush

UNDER THE HOOD

Why the tricks work



Dopamine is about wanting, not liking

It spikes when a reward is uncertain or better than expected. That’s why variable rewards are so sticky.

Habits

Cue, routine, reward: repeated until automatic.

Evolution

We’re wired to chase scarce resources and status.

Emotions

Urgency, pride and fear override slow thinking.

Perceived control

Feeling in charge keeps us playing.

DARK PATTERNS AND BIASES

Fast and slow thinking

Conditioning trains what we do over time. Biases decide what we pick in the moment.

SYSTEM 1

Fast

Automatic, effortless, always on. Runs on shortcuts.

e.g. tapping “Accept all”, taking the default, reacting to a red badge

SYSTEM 2

Slow

Deliberate and effortful. Checks the work, when it has the energy.

e.g. comparing plans, reading the fine print, doing the maths

Biases are System 1’s shortcuts. **Dark patterns are built to keep you there:** rushed, tired, distracted.

Daniel Kahneman, Thinking, Fast and Slow (2011)

DARK PATTERNS AND BIASES

Dark patterns exploit cognitive biases

Dark patterns

Design tricks that steer you toward what benefits the business, not you.

e.g. hidden costs, forced continuity, confirmshaming, bait and switch

exploit



Cognitive biases

Mental shortcuts that make our decisions predictable.

e.g. loss aversion, anchoring, social proof, scarcity

BIASES · 1 OF 5

Decision-making shortcuts

Choice overload

Too many options and we freeze, or take the default.

In practice: “Most popular” bundles, pre-selected plans.

Illusion of control

Choices that change nothing still feel empowering.

In practice: Dialogue trees with little real impact.

Near-miss effect

Almost winning feels like progress, so we keep going.

In practice: Reels stopping just past the jackpot.

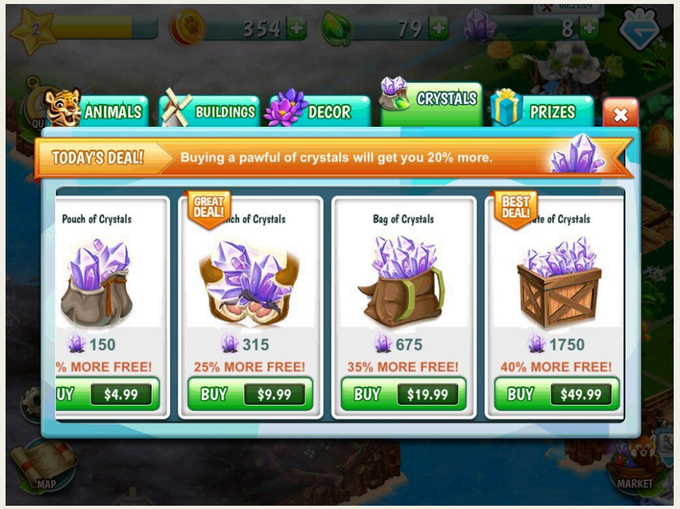
Decoy effect

A worse option makes the target look like a deal.

In practice: Medium popcorn priced almost like the large.

BIASES · 2 OF 5

Attention and perception



Anchoring

The first number we see sets our sense of value.

In practice: A crossed-out €99 next to €29.

Framing

Same facts, different feelings.

In practice: “Only €1 a day” instead of €365 a year.

Salience

Whatever stands out gets chosen.

In practice: A glowing “Buy” beside a grey “No thanks”.

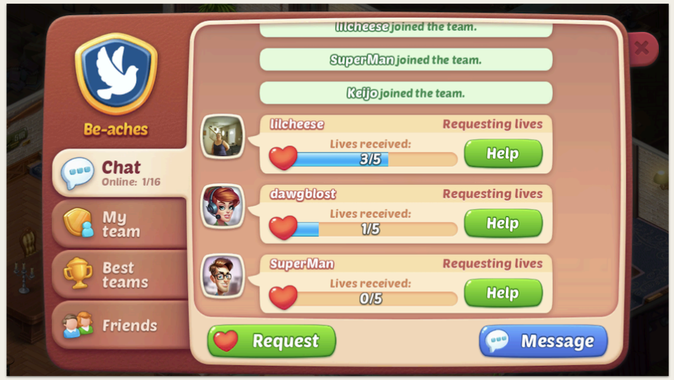
Misdirection

Pull focus to one thing so another goes unnoticed.

In practice: A big “Continue” that also accepts an add-on.

BIASES · 3 OF 5

Social motivators



Social proof

We copy what others seem to be doing.

In practice: “2,300 people bought this today.”

Reciprocity

A gift makes us feel we owe something back.

In practice: A friend sends you lives, so you send some back.

IKEA effect

We value what we helped build.

In practice: Custom avatars, bases and playlists.

Bandwagon effect

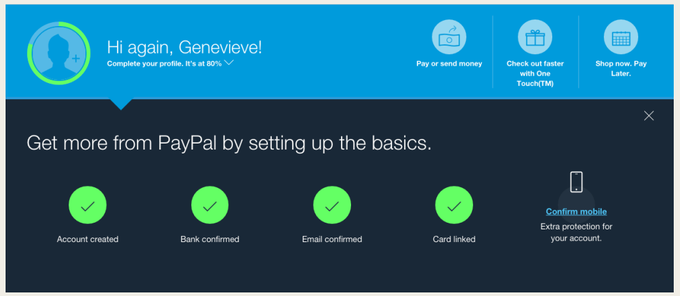
The more people join, the more we want in.

In practice: Trending lists and viral challenges.

BIASES · 4 OF 5

Motivation and progress

YOUR PROFILE 90%



Endowed progress

A head start makes us more likely to finish.

In practice: A stamp card with two stamps already filled.

Goal gradient

The closer the goal, the harder we push.

In practice: “Your profile is 90% complete.”

Zeigarnik effect

Unfinished tasks stick in our minds.

In practice: Half-full rings, cliffhangers, red badges.

Expectancy

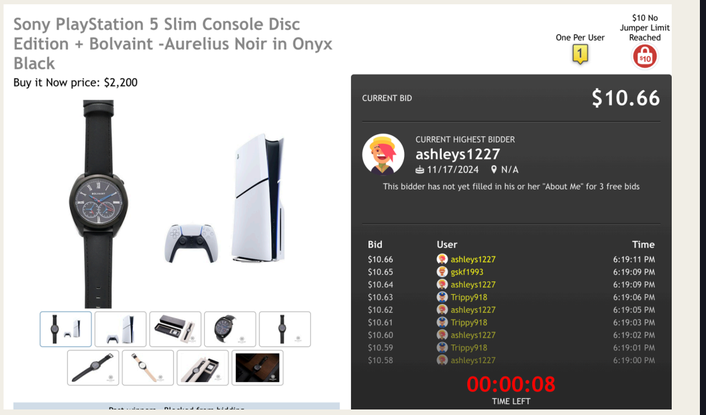
We try harder when we expect a reward we value.

In practice: Showing the next unlock and what it takes.

BIASES · 5 OF 5

Scarcity and loss

OFFER ENDS IN
04:59



Fear of missing out

Urgency pushes us to act right now.

In practice: Limited-time events, countdown timers.

Artificial scarcity

“Limited” makes things feel more valuable.

In practice: Limited-edition skins, “only 3 left”.

Loss aversion

A loss hurts more than an equal gain feels good.

In practice: Streaks, expiring points, status you can lose.

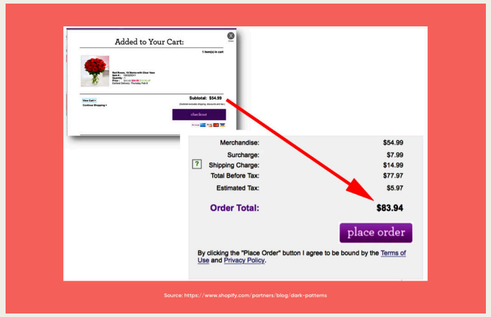
Sunk cost fallacy

We keep going because of what we already spent.

In practice: “You’ve played 200 hours, don’t quit now.”

DARK PATTERNS

Six tricks to recognise



Bait and switch

A “free” feature turns premium after you sign up.

Disguised ads

Ads dressed up as content or a “Download” button.

Forced continuity

Free trials that quietly roll into paid plans.

Hidden costs

Fees that only appear at the last checkout step.

Confirmshaming

“No thanks, I don’t like saving money.”

Infinite scroll

No natural stopping point, so you never decide to stop.

TAKE-HOME TASK

Spot the Dark Arts

STEP 1

Open an app you use every day.

STEP 2

Find two tricks from today’s lecture.

STEP 3

Name the bias each one targets.

ETHICS

Ethics of persuasive technology

Ethical outcome
Don’t aim for results that would be wrong without the tech.

Ethical motives
The reasons behind the design must hold up too.

Responsibility
Creators own the outcomes they could predict.

Privacy
Treat users’ data as carefully as your own.

Disclosure
Be open about who benefits and how.

Accuracy
Never persuade with false information.

Golden rule: never try to persuade people of something you wouldn’t want to be persuaded of yourself.

Berdichevsky & Neuenschwander (1999), “Toward an Ethics of Persuasive Technology”, Communications of the ACM 42(5)

ETHICS

Regulators are catching up

2018	**Belgium**	Gaming Commission rules paid loot boxes are illegal gambling.
2022	**FTC vs Epic Games**	$245M in refunds over dark patterns in Fortnite.
2024	**Robinhood**	$7.5M Massachusetts settlement over gamified trading.
2024	**EU Digital Services Act**	Article 25 bans dark patterns on online platforms.
2025	**FTC vs HoYoverse**	$20M over Genshin Impact loot boxes; no sales to under-16s without parental consent.

ETHICS

Would your users thank you later?

- Does it serve the user’s own goal, not just your metric?
- Can they stop, cancel or leave as easily as they joined?
- Are odds, prices and costs visible up front?
- Would you be fine with users seeing exactly how it works?
- Lead with White Hat drives; use Black Hat ones briefly and openly.

LEVEL COMPLETE

Four things to take home

1. Gamification is motivation design, not just points and badges.
2. The same mechanics can empower or exploit. The goal decides which.
3. Random rewards, loss and scarcity are the strongest levers, and the riskiest.
4. You can use all of this on your own work, projects and habits.

GAME OVER · THANKS FOR PLAYING

Questions?

WATCH LIST



Extra Credits: Gamification and real life
youtu.be/1dLK9MW-9sY

Yu-kai Chou at TEDxLausanne
youtu.be/v5Qjuegtiyc



Gamification: The Good & Bad
youtu.be/IwmGWOufb5g



Destiny: The Hardcore Gamer's Slot Machine
youtu.be/g79dWuqXe5o



How Dark Patterns Trick You Online
youtu.be/kxkrdLI6e6M



Extra Credits: Don't Be a Victim of Dark Patterns
youtu.be/SyeZf50jQXU