



The Gamer's Brain: part 3

The UX of Engagement and Immersion (or Retention)

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@CeliaHodent

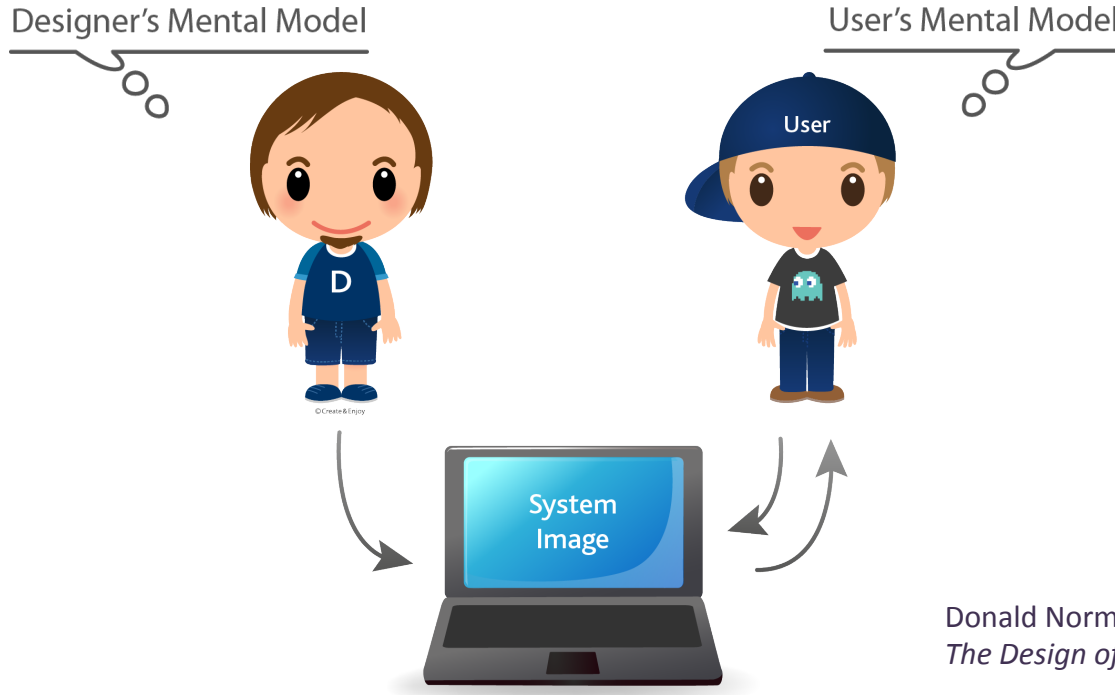
Slides available soon:
celiahodent.com



Introduction



A definition of User eXperience

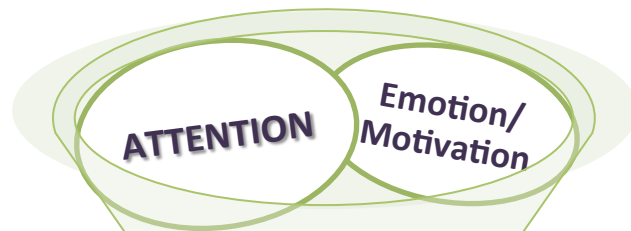


Donald Norman,
The Design of Everyday Things (1988)

REMINDER: How the brain processes info

PERCEPTION

(input)



INFLUENCING
FACTORS



INFO PROCESSING



MEMORY

(synaptic modification)



Intro

Motivation

Emotion

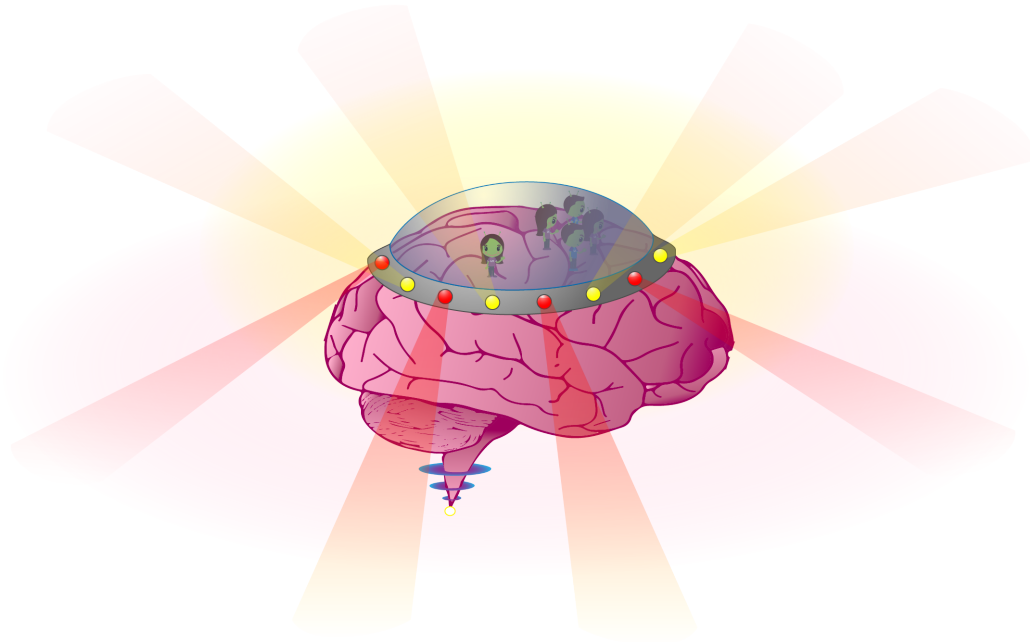
Gameflow

Conclusion

RETENTION

Players who retain are more likely to convert (monetization)

Good UX = Usability + Engage-ability



Three Engageability Buckets

Motivation



Emotion



Game flow





Motivation

Emotion

Game flow

Motivation




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Category:Motivational theories

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The main article for this category is [Motivation](#).

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- [Need for affiliation](#)
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No unified theory of human motivation currently exists.

M

- [Maslow's hierarchy of needs](#)
- [McGuire's Motivations](#)
- [Mortality salience](#)
- [Motivation crowding theory](#)
- [Motivational intensity](#)
- [Murray's system of needs](#)

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Human Motivation: Mapping attempt (for game dev)

Implicit motivation &
biological drives

impulses

Personality &
individual needs

OCEAN

Environmental-
shaped motivation &
learned drives

behaviorism

Intrinsic motivation
& cognitive needs

SDT



Implicit motivation & biological drives

- Power motive
- Achievement motive
- Affiliation motive



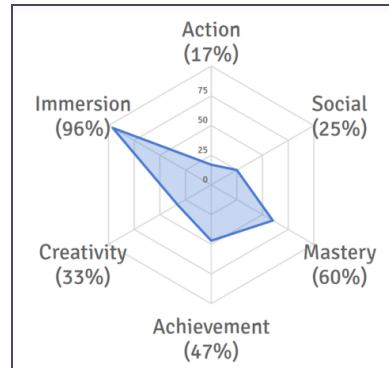
→ Strength of these drives **depends** on individuals!



O	Openness to Experience	High <i>Imaginative</i>	Low <i>Conventional</i>
C	Conscientiousness	High <i>Organized</i>	Low <i>Spontaneous</i>
E	Extraversion	High <i>Outgoing</i>	Low <i>Solitary</i>
A	Agreeableness	High <i>Trusting</i>	Low <i>Competitive</i>
N	Neuroticism	High <i>Prone to stress</i>	Low <i>Emotionally stable</i>



**Personality &
individual needs**



Intro

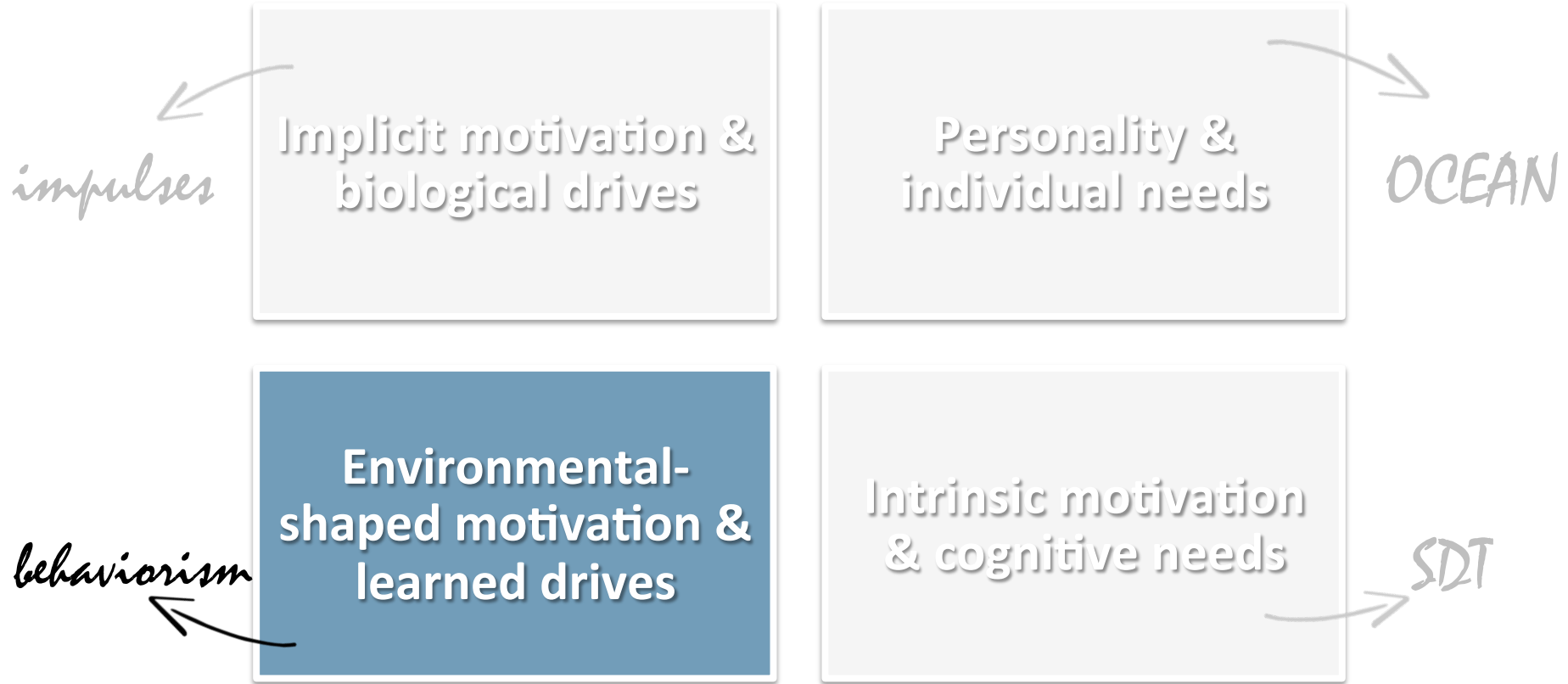
Motivation

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Human Motivation: Mapping attempt (for game dev)



Environmental-shaped motivation (behaviorism)



	Positive (+) → additive	Negative (-) → subtractive
Reward (increase behavior)	Give carrot (R+)	Remove stick (R-)
Punishment (decrease behavior)	Give stick (P+)	Remove carrot (P-)

Types of rewards



Continuous rewards

Behavior (player action) is **ALWAYS** rewarded

→ Important for *learning* (feedback) and
general *game feel*

Intermittent rewards

Behavior is **SOMETIMES** rewarded

→ Important for *sustained*
engagement

Intermittent Rewards

- **Fixed** interval
- **Variable** interval

INTERVAL
(depends on time)

Intermittent rewards

- **Fixed** ratio
- **Variable** ratio

RATIO
(depends on behavior)

Fixed interval examples



Fortnite (Closed Alpha)



Clash of Clans

→ You get the reward after a fixed and determined amount of time.

Fixed interval example



→ Reward disappears after a fixed amount of time.

Fortnite (Closed Alpha)

Variable interval examples



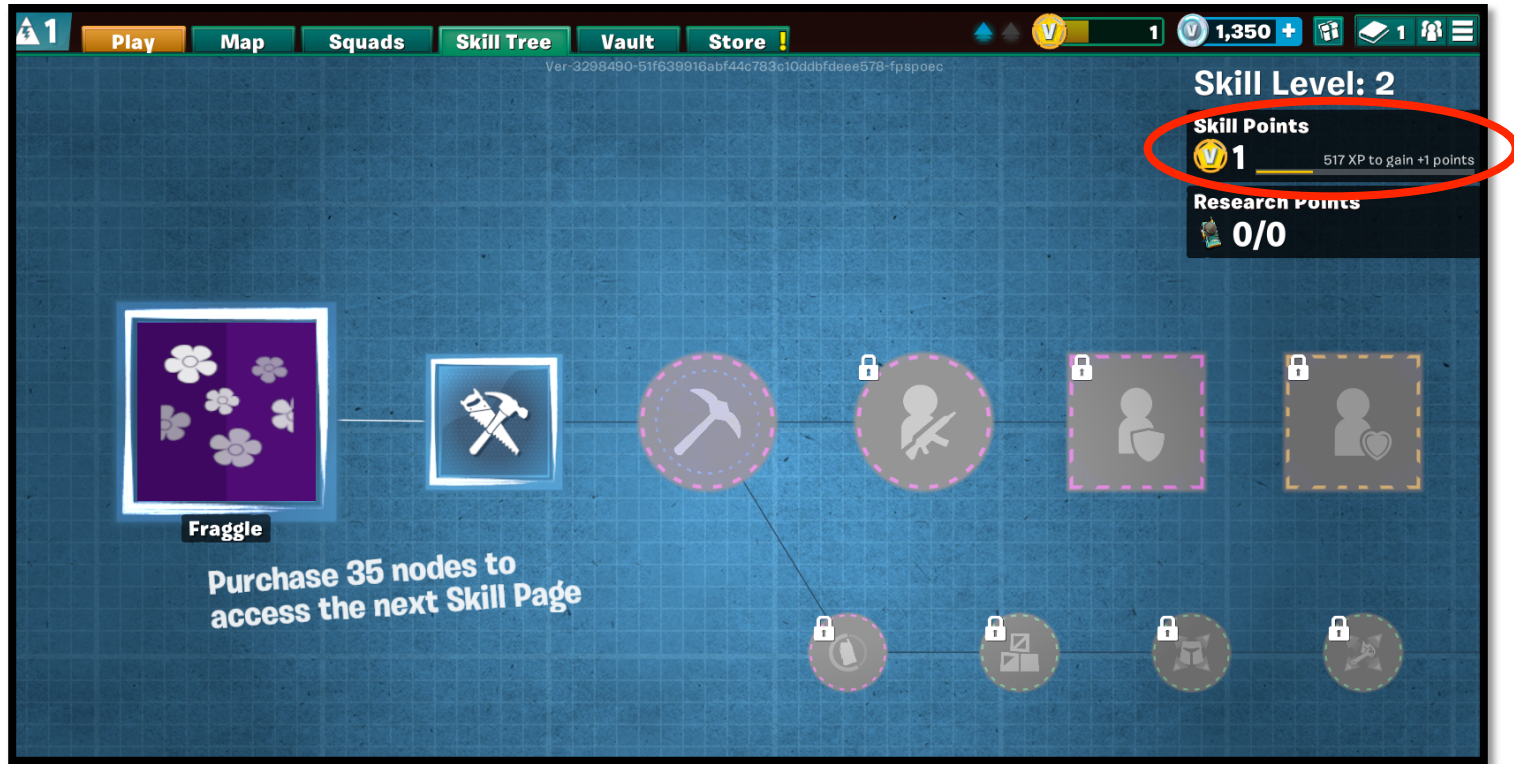
Pacman bonus (cherry)



World of Warcraft rare spawns

→ Reward appears over time unexpectedly.

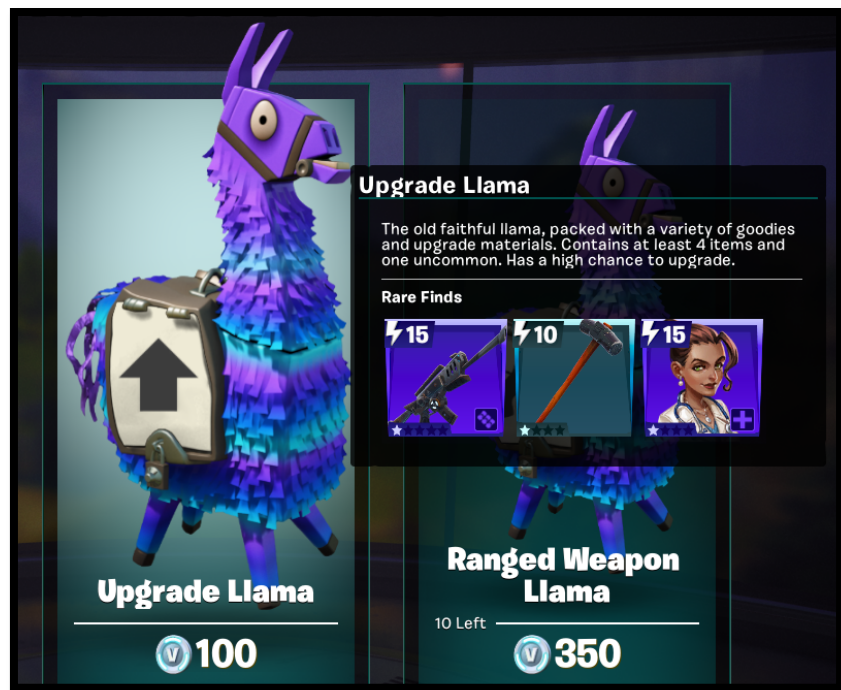
Fixed ratio examples



Fortnite (Alpha)

→ You get the reward after a fixed and determined number of actions (e.g. skill trees and *kinda* progression bars).

Variable ratio examples



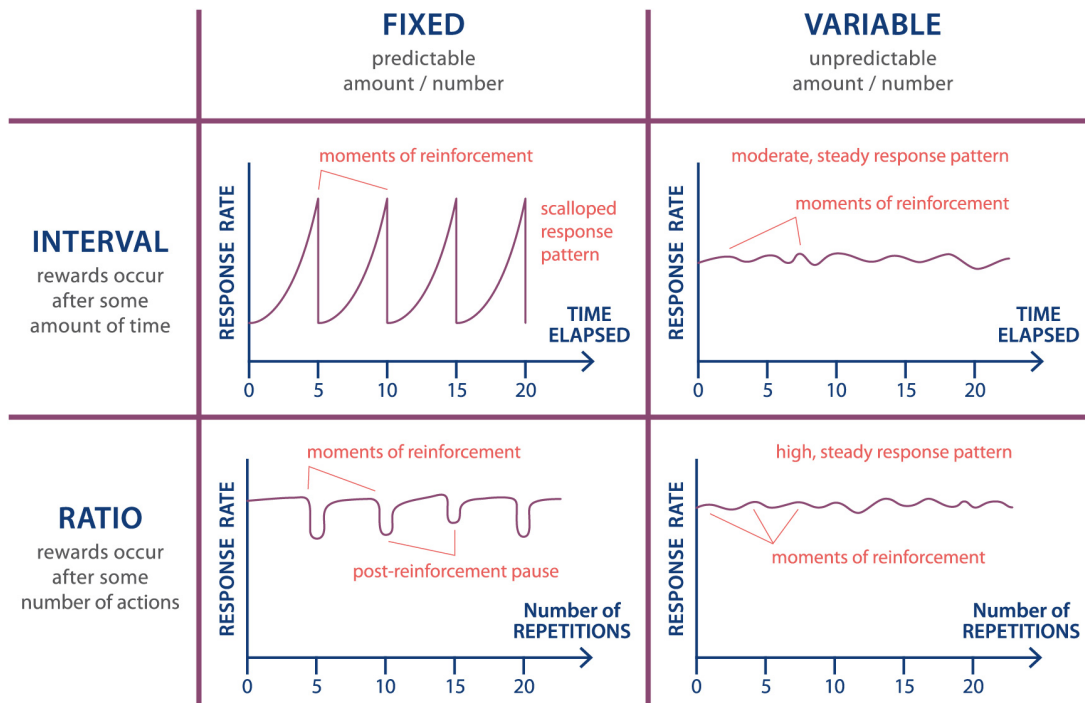
Fortnite (Closed Alpha)



Hearthstone

→ You get a meaningful reward unexpectedly, after a various number of actions.

Intermittent Rewards



Fixed:

Behavior pauses after reinforcement
 If rewards stop coming → fast response extinction

Variable:

Most steady response rate

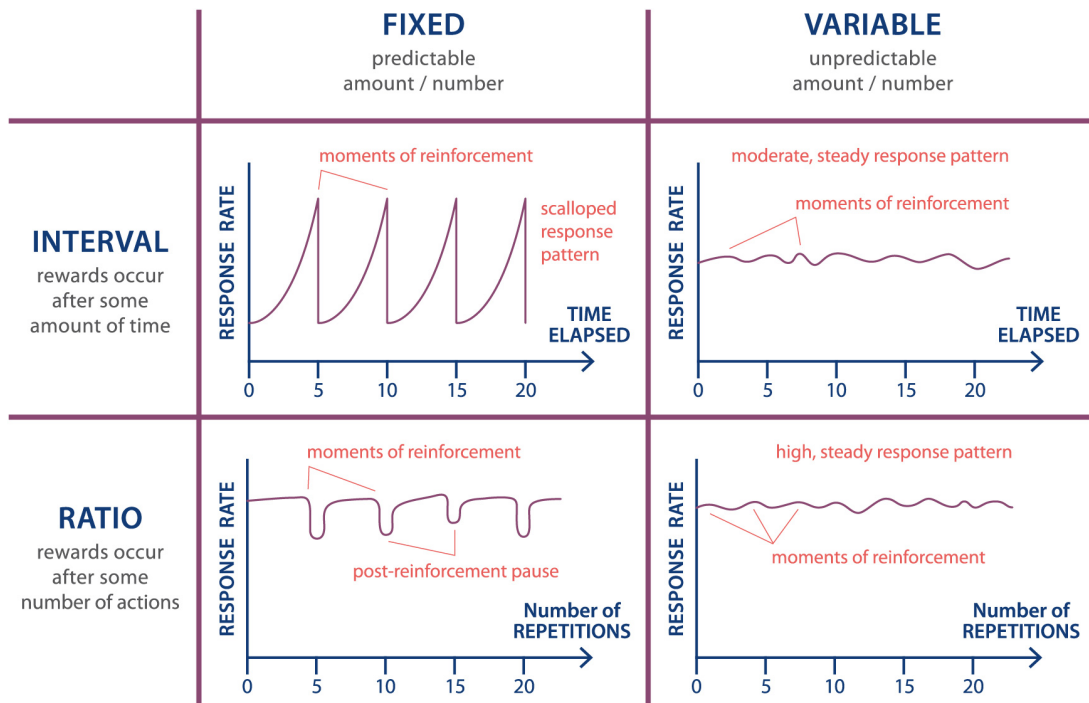
Ratio:

Creates higher response rate

→ Variable Ratio:

High *and* steady

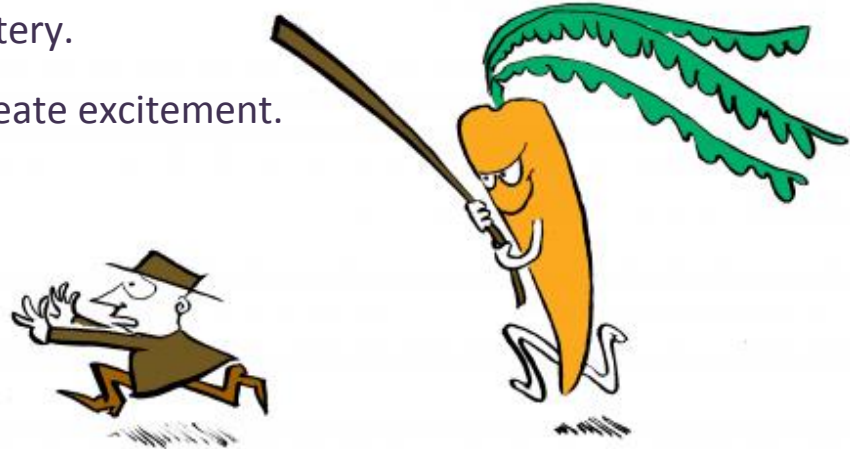
Intermittent Rewards



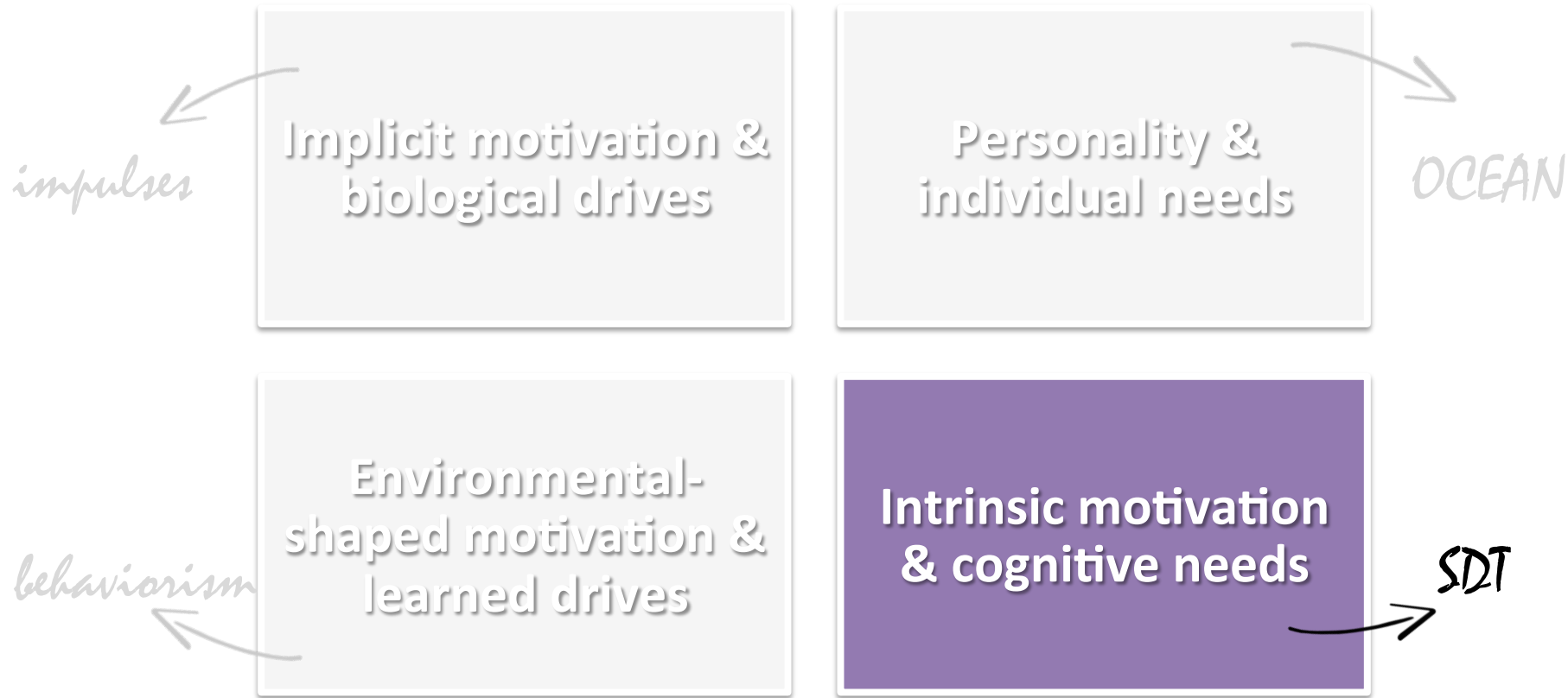
Extrinsic rewards can deter IM?
→ It depends!

Rewards: A few guidelines

- Consider all **rewards** and **punishments** your game provide.
- **Always** give **feedback** to ALL player actions (see game feel), but:
 - Give **consistent reward** for most **meaningful actions**.
 - The **more** effort / time, the **greater** the reward expected.
 - Absence of these rewards will likely be felt as **punishments**.
- Use rewards at **intermittent intervals** for player habit formation and player strategy.
- Use rewards at **fixed ratio** to create a sense of mastery.
- Use rewards at **variable ratio** for some chests to create excitement.
- Mix it all!



Human Motivation: Mapping attempt (for game dev)



Intrinsic motivation: Self-Determination Theory (SDT)

Competence

- Sense of progression
- Be in control

Autonomy

- Sense of volition / meaningful choices
- Self-expression

Relatedness

- Cooperation
- Competition

Intrinsic motivation: Self-Determination Theory (SDT)

Competence

Autonomy

Relatedness

→ Undermining effect of extrinsic reward can take place when they thwart these 3 needs.



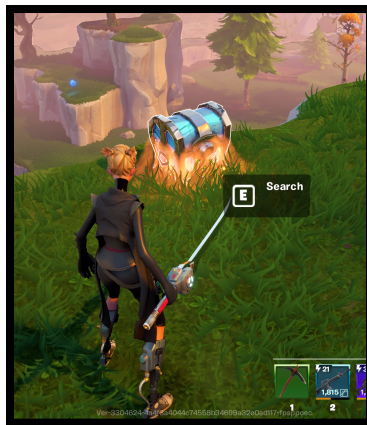
illusion of control

Intrinsic motivation: Self-Determination Theory (SDT)

- SDT alone **cannot** account for all human behavior.
- Undermining effect of extrinsic reward on intrinsic motivation **depends on the context**.
- Some SDT theorists moved away from intrinsic/extrinsic motivation dichotomy:
 - Focus on distinction between **autonomous** and **controlled** motivation (with different types of rewards).
- It largely depends on how players **perceive** the rewards.
- Most importantly: goals and rewards must be **meaningful** to players.

Autonomous vs. Controlled Rewards

- **Non-contingent** rewards
(not related to any particular behavior)
- **Task-contingent** rewards:
 - Rewarding engagement
 - Rewarding completion
 - Rewarding performance



Fortnite



WoW



Angry Birds SW

→ The more incentives try to **control** players the more likely it will have an undermining effect on intrinsic motivation.

Swimming in rewards: good only *if* meaningful

WEEKLY QUEST

Complete one of these objectives to earn a powerful card pack!

- Seek and Destroy** (Active, 3 stars, 6 points)
- Merciless** (Passive, 3 stars, 4.5 points)
- Bloodsoaked Armor** (Active, 3 stars, 7.5 points)

Win 4 games playing as a melee hero. 1/4	Across multiple victories, destroy 400 minions. 96/400
Across multiple victories, take down 100 heroes. 11/100	Across multiple victories, destroy 15 wards. 0/15

New Quest Available:
6d, 23h
OK

Paragon UX 6 - 11:20:51 Jefferson_06 12/07/16

→ Too many rewards early on when players don't really know their purpose yet.

REMEMBER

- Give **clear goals** (short-, mid-, long-term)
- Offer **non controlling** rewards that give **feedback on competence**
- Goals and rewards must be *meaningful* to the player
- Rewards: not ending point, but *starting point* for next goal

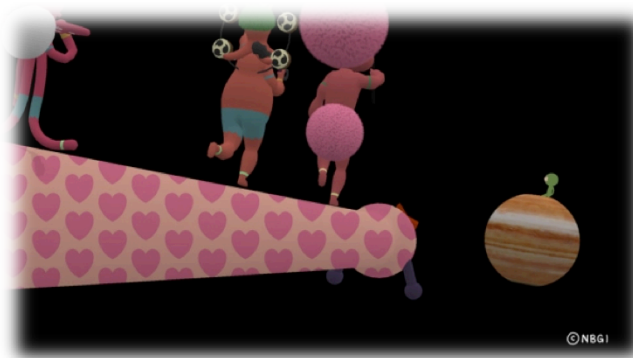
Meaning: purpose bigger than the self



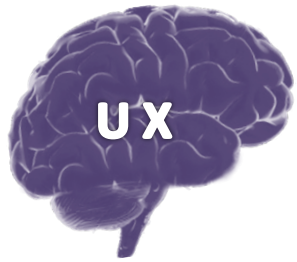
For Honor



Pokémon Go



Noby Noby Boy



Motivation: Key takeaway

Motivation

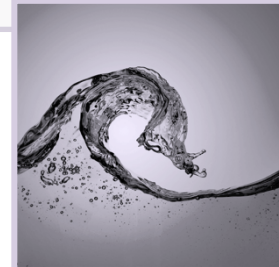
- Implicit drives
- Personality
- **Meaningful rewards**
- **Intrinsic motivation**



Emotion



Game flow



Motivation

Emotion

Game flow



Emotion

Emotion ...

*Seeking pleasure
Avoiding pain*

... guides our
behavior

... is influenced
by cognition



*Appraisal (judgment)
Reappraisal*

Emotion is influenced by cognition



Overwatch

Intro

Motivation

Emotion

Gameflow

Conclusion

Emotion in game design

Game feel

*Feels good to interact with:
3C - presence - physical reality*

Discovery,
novelty, surprises

Impact engagement and awareness

Game feel



Fortnite
(Closed Alpha)

Intro

Motivation

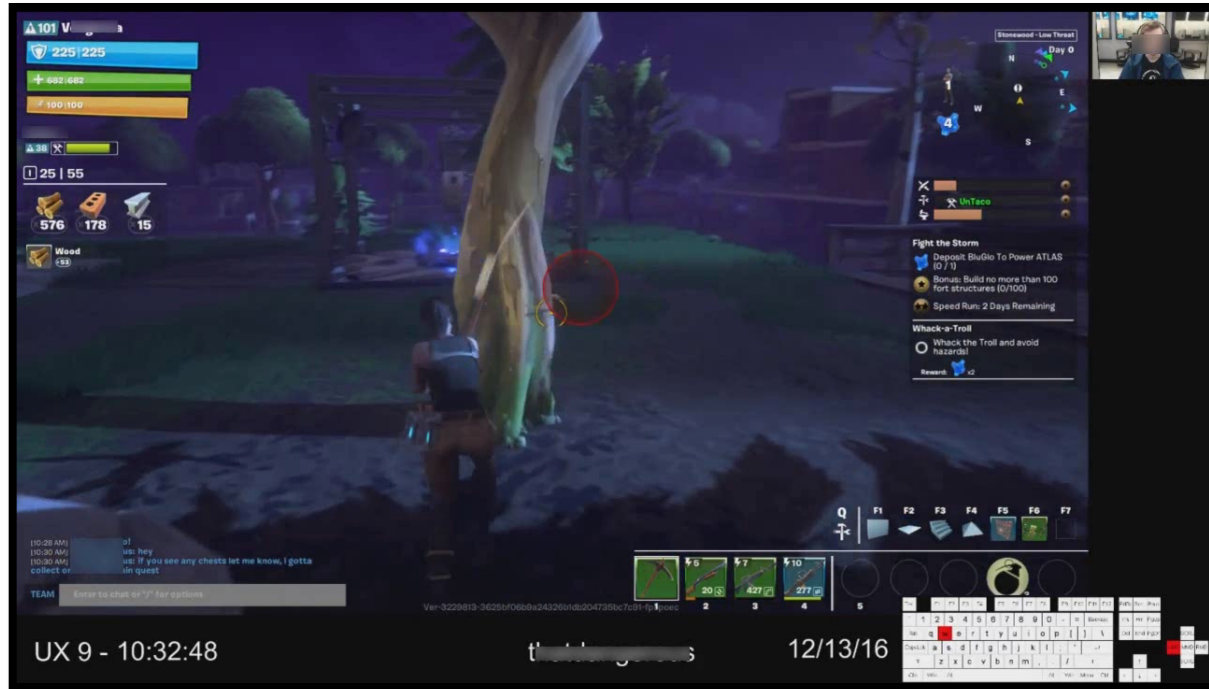
Emotion

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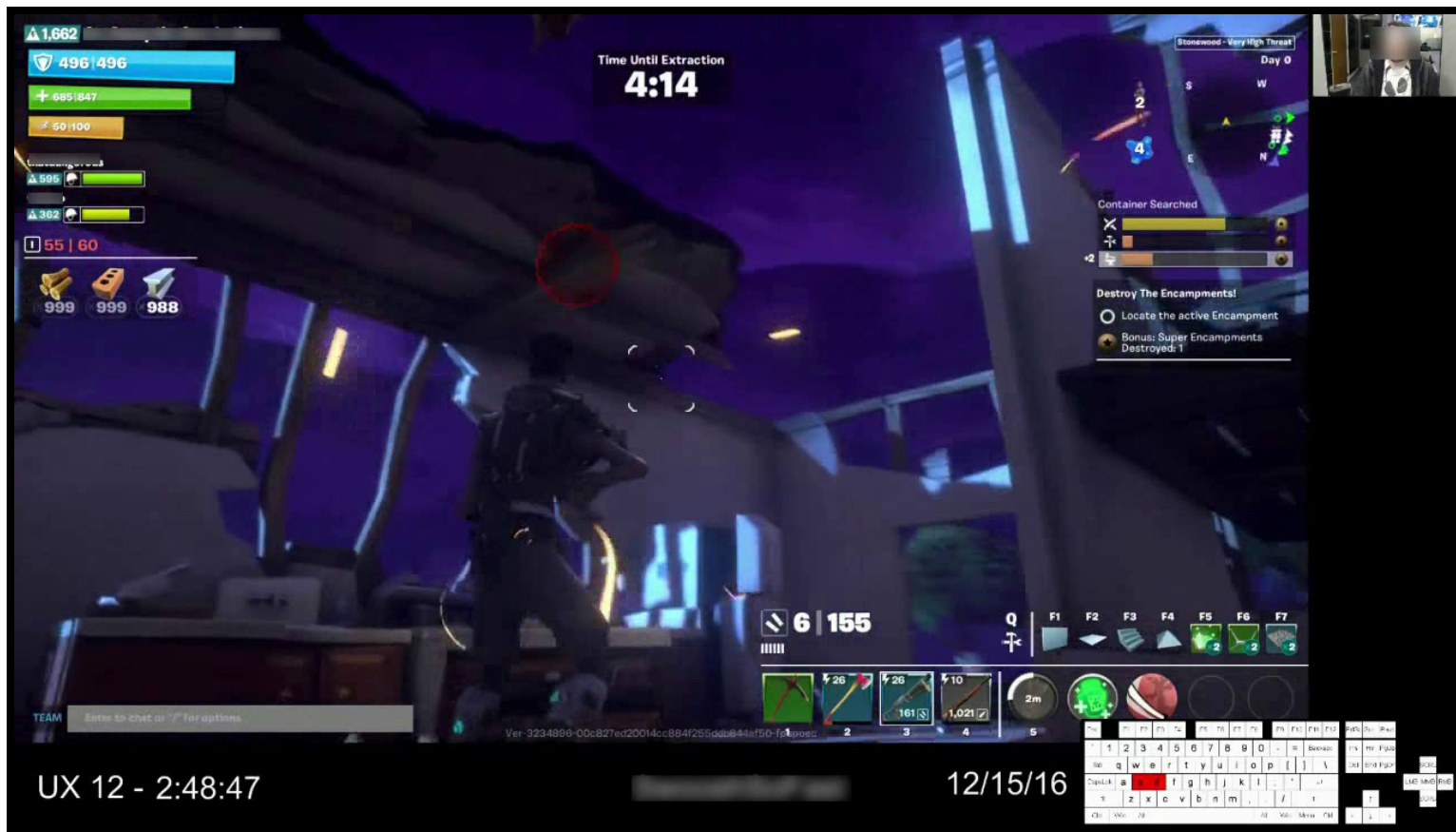
Game feel

Harvesting mechanic: hit the weak point (blue target)!
→ Toy within the harvesting mechanic, making it more engaging.



Fortnite
(Closed Alpha)

Surprise!



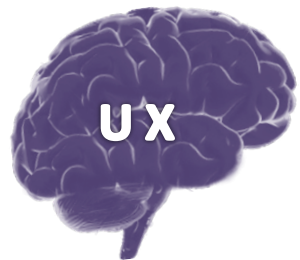
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Emotion: Key takeaway

Motivation

- Implicit drives
- Personality
- Rewards
- Intrinsic motivation

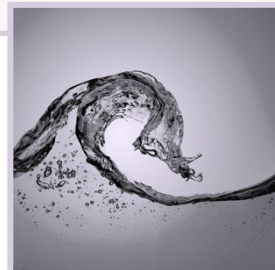


Emotion

- **Game feel**
(3C's, presence, physicality)
- **Discovery, novelty, surprises**



Game flow





Motivation

Emotion

Game flow

Game flow

Game flow

Difficulty curve



Challenge

Pacing



Rhythm of stress + pressure

Learning curve



Onboarding

Intro

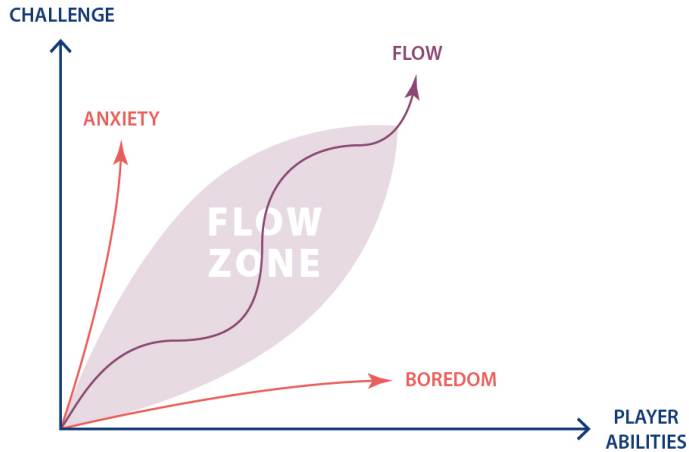
Motivation

Emotion

Gameflow

Conclusion

Difficulty curve: challenge (saw tooth)



Shadow of Mordor

→ Give players a **reference point** to make them *feel their growth*

Pacing: Manage stress



Fortnite (Closed Alpha)

Feeling competent: tutorials matter a lot more than you think



Paragon

Intro

Motivation

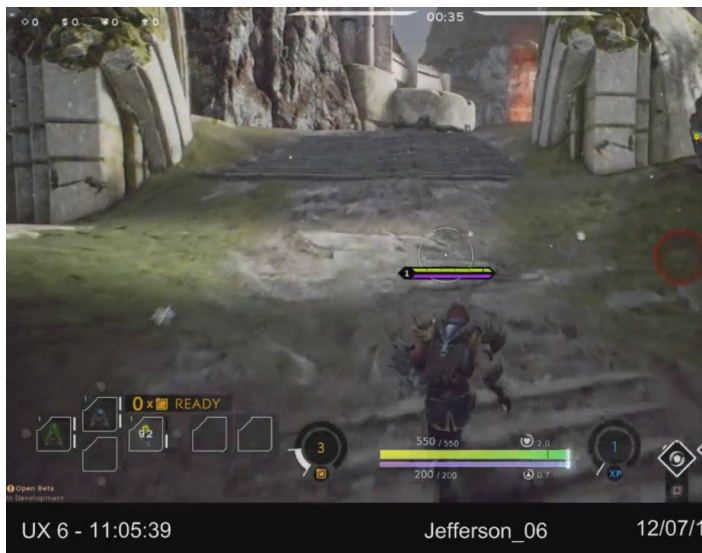
Emotion

Gameflow

Conclusion

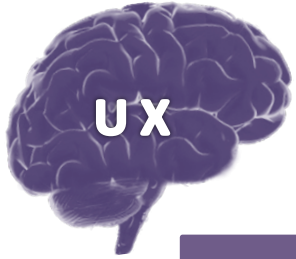
Feeling competent: tutorials matter a lot more than you think

Paragon



→ Top 5 UX issues seen in UX tests **months before launch** correlated with top 5 analytics factors impacting retention analyzed once live (e.g. tower aggro understanding)

Game flow: Key takeaway



Motivation

- Implicit drives
- Personality
- Rewards
- Intrinsic motivation



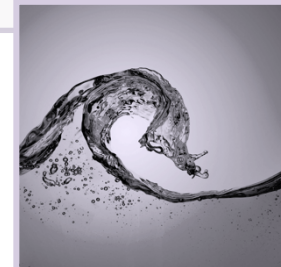
Emotion

- Game feel
(3C's, presence, physicality)
- Discovery, novelty, surprises



Game flow

- **Difficulty curve**
- **Pacing**
- **Learning curve**



Intro

Motivation

Emotion

Gameflow

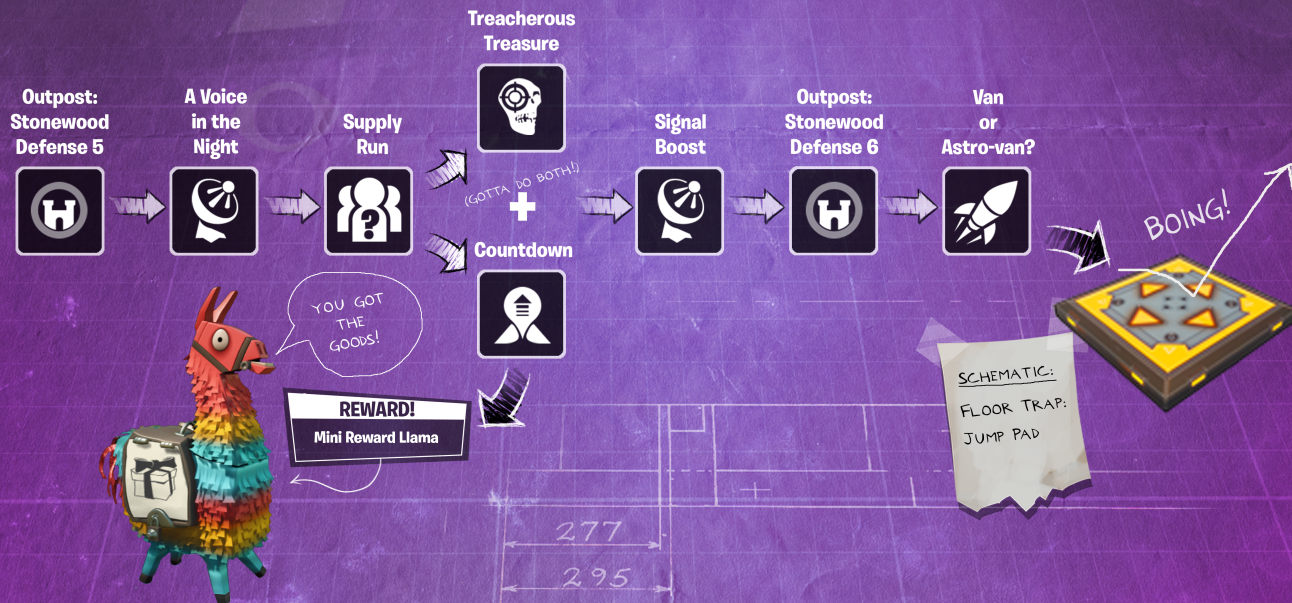
Conclusion

Conclusion

STONEWOOD

Very High Threat

FORTNITE QUEST MAP



REMEMBER

- Retention (engage-ability) is about *motivation*, which entails managing goals (e.g. quests, events) and rewards, but not only.
- Motivation has a lot to do with moment-to-moment *emotions*: game feel & surprises.
- And it's mostly about feeling *competent* and a sense of growing mastery: *game flow*, especially *onboarding*, is paramount.
- *Usability* has a critical impact on all of the above.

Three « Engage-ability » Buckets

MEANING

(the sense of purpose, to rule them all ...)

Motivation

- Implicit drives
- Personality
- Rewards
- Intrinsic motivation



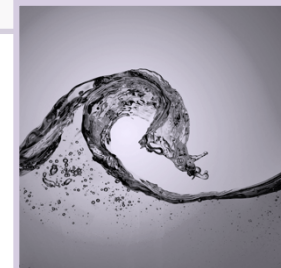
Emotion

- Game feel
(3C's, presence, physicality)
- Discovery, novelty, surprises



Game flow

- Difficulty curve
- Pacing
- Learning curve



You found a weakness: find WHY it's happening

PackageID	Value	MinG	MaxG	IPCat	Require	ItemData
WorldPKG.RareMetal	1			1		WorldLoot.Metal
WorldPKG.RareOutbeast	1.2					WorldLoot.Rarebeast
WorldPKG.RareOutbeast	0.05			0		WorldLoot.Metal
WorldPKG.RareOutbeast	1			0		WorldLoot.Craftinggradeiron
WorldPKG.Rarebeast	3.5			0		WorldLoot.Rarebeast
WorldPKG.Rarebeast	2.5			0		WorldLoot.Metal
WorldPKG.Rarebeast	5			0		WorldLoot.Craftinggradeiron
WorldPKG.ObsidianChest1	1		4	1		
WorldPKG.ObsidianChest2	1			0		AmmaLight
WorldPKG.ObsidianChest2	1	6	2	1		WLD.Launcher.Rocket.R.Ore.100
WorldPKG.ObsidianChest2	1	2	2	0		AmmaLight
WorldPKG.ObsidianChest2	1	10	10	3		OB.Trap.Plan.Silky
WorldPKG.ObsidianChest2	1	20	20	2		RareResource.Metal
WorldPKG.ObsidianChest2	1			0		RareResource.Stone
WorldPKG.ObsidianChest2	1			4		WLD.EdgeGuardMedium.C.Ore.100
WorldPKG.ObsidianChest1	1	7	7	0		AmmaMedium
WorldPKG.ObsidianChest1	1	20	20	2		RareResource.Stone
WorldPKG.ObsidianChest1	1	20	20	1		RareResource.Stone
WorldPKG.Hazard2	0.3			0		WorldLoot.RarebeastLoot
WorldPKG.Hazard2	0.14			0		WorldLoot.Jackpot
WorldPKG.Hazard2	1.5			0		WorldLoot.AmmaHigh
WorldPKG.Hazard2	1.5			0		WorldLoot.Craftinggradeiron
WorldPKG.Hazard2	3			0		WorldLoot.Trap
WorldPKG.Hazard2	0.3			0		WorldLoot.RarebeastLoot
WorldPKG.Hazard2	0.148			0		WorldLoot.Jackpot
WorldPKG.Hazard2	1.5			0		WorldLoot.AmmaHigh
WorldPKG.Hazard2	2			0		WorldLoot.Craftinggradeiron
WorldPKG.Hazard2	4			0		WorldLoot.Trap
WorldPKG.Hazard2	0.25			0		WorldLoot.RarebeastLoot
WorldPKG.Hazard1	0.1			0		WorldLoot.Jackpot
WorldPKG.Hazard1	0.05			0		WorldLoot.Amma
WorldPKG.Hazard1	1			0		WorldLoot.Craft
WorldPKG.Hazard1	2			0		WorldLoot.Trap
WorldPKG.LivingRoom	0.25			0		WorldLoot.RarebeastLoot
WorldPKG.LivingRoom	0.045			0		WorldLoot.RarebeastLoot
WorldPKG.LivingRoom	1.5			0		WorldLoot.Amma
WorldPKG.LivingRoom	1.5			0		WorldLoot.Craft
WorldPKG.LivingRoom	1			0		WorldLoot.Food
WorldPKG.LetsJoin	1		10	1		
WorldPKG.LetsJoin	1		25	5		
WorldPKG.LetsJoin	1		75	4		
WorldPKG.LetsJoin	1		100	3		
WorldPKG.LetsJoin	1			0		
WorldPKG.LetsJoin	1			0		
WorldPKG.Kitchen	0.077			0		WorldLoot.Jackpot
WorldPKG.Kitchen	0.5			0		WorldLoot.RarebeastLoot
WorldPKG.Kitchen	3			0		WorldLoot.Amma
WorldPKG.Kitchen	3			0		WorldLoot.Craft
WorldPKG.Kitchen	0.046			0		WorldLoot.Food
WorldPKG.Industrial	1.5			0		WorldLoot.Amma
WorldPKG.Industrial	2			0		WorldLoot.Craft
WorldPKG.Industrial	1			0		WorldLoot.Trap
WorldPKG.Industrial	1.5			0		WorldLoot.RarebeastLoot
WorldPKG.GroundLoot	1			0		



Your loot design

I received many interesting resources/loot

loot from chests was exciting

when I found chests I was enthusiastic

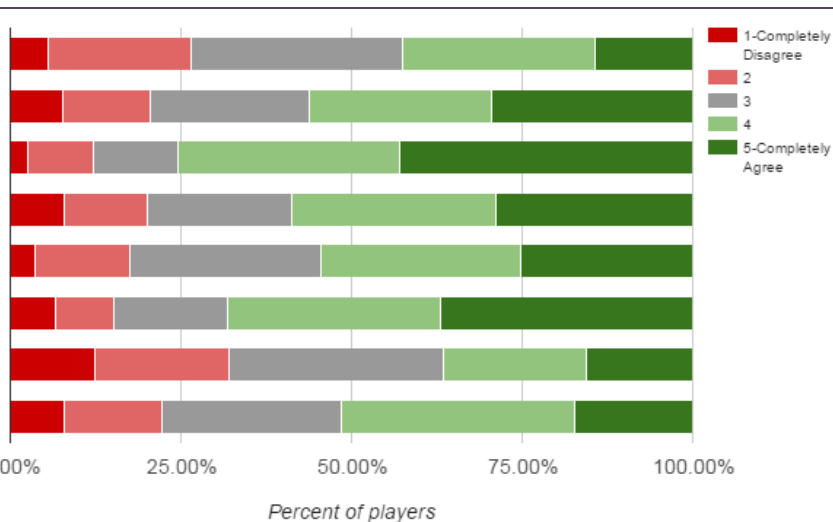
the resources/loot helped me support other players

I was enthusiastic about the resources/loot

I had specific goals when harvesting resources

I had many interesting activities I could do to gain resources/loot

the resources/loot improved my abilities



Player perception



Intro

Motivation

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Find out why: feeling “grindy”



Fortnite
(Closed Alpha)

Find out why: mastering harvesting (e.g. weak points)

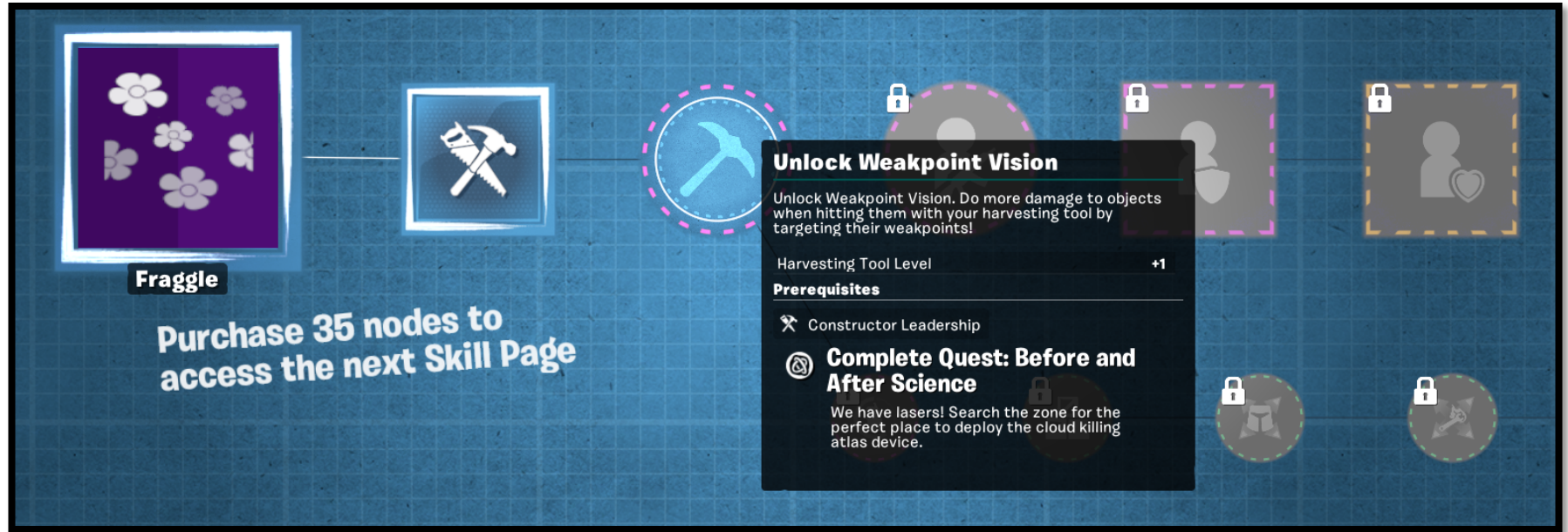


Fortnite (2014 dev build)



Fortnite (2015 dev build)

Find out why: mastering harvesting (e.g. weak points)



“Weakpoint vision” is now unlocked after players have experienced harvesting without it.
→ Now it’s a reward that has a *meaning*.

What about game developers' motivation?...



USER EXPERIENCE

- ☐ Signs & Feedback
- ☐ Clarity
- ☐ Form Follows Function
- ☐ Consistency
- ☐ Minimum Workload
- ☐ Error Prevention / Recovery
- ☐ Flexibility

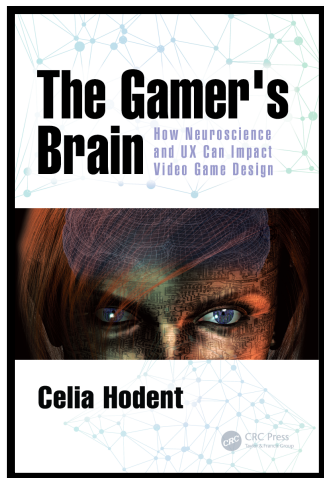
USABILITY

- ☐ **Motivation**
*competence, autonomy, relatedness
meaning, rewards, implicit motives*
- ☐ **Emotion**
game feel, presence, surprises
- ☐ **Game flow**
difficulty curve, pacing, learning curve

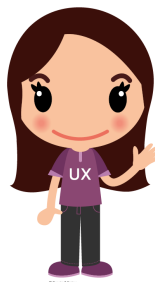
ENGAGE-ABILITY



THANKS!



(August 26th 2017, CRC Press)



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Slides: celiahodent.com (up soon!)

Game UX Summit (Oct. 4-5):
Hosted by Ubisoft Toronto

