



Solving Puzzle Design

Jolie Menzel

Level Designer, Ubisoft SF

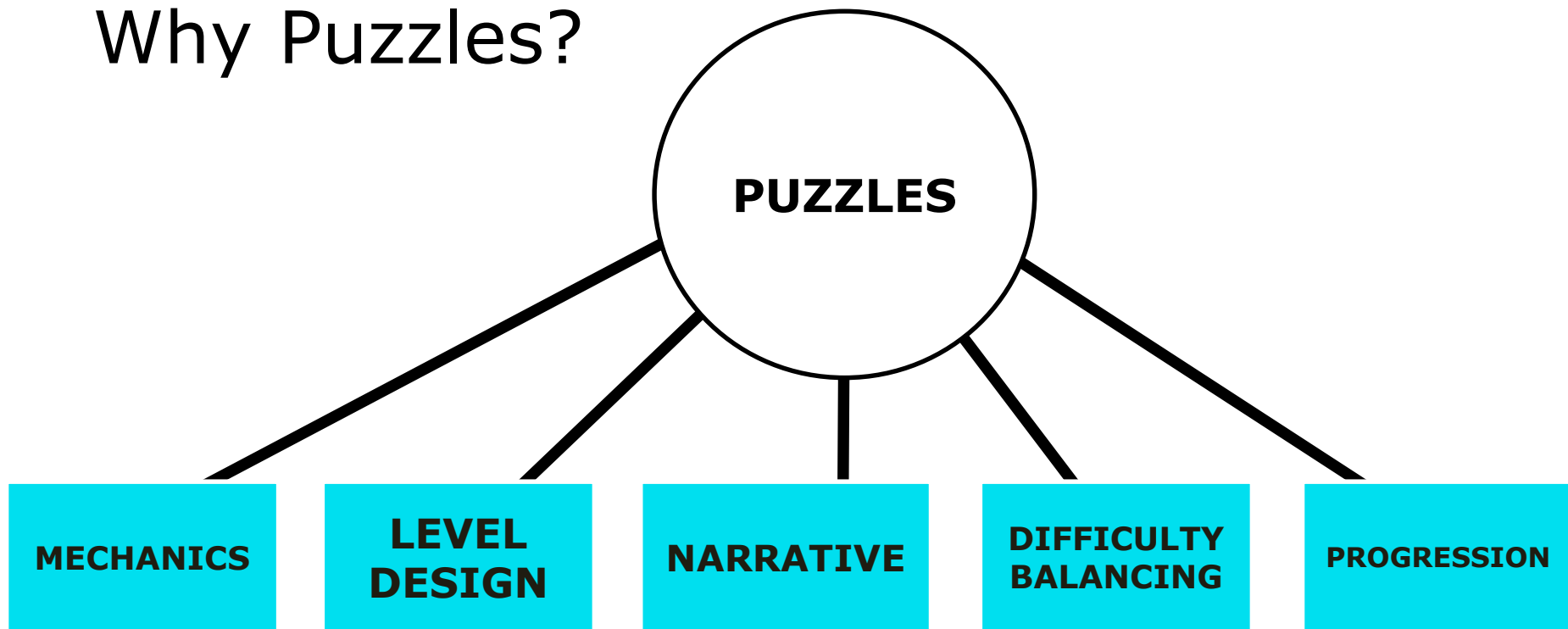


telltalegames



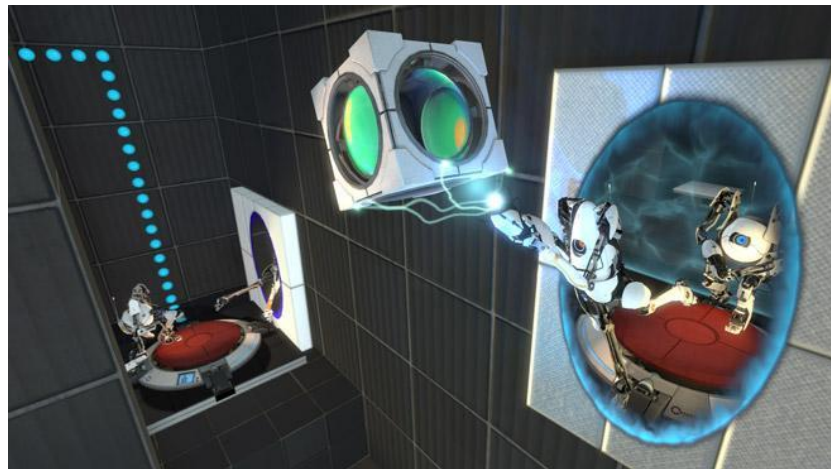
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Why Puzzles?



Overview

- What is a puzzle?
- What makes a puzzle “good”?
- Elements of a puzzle
- Rational puzzle design
- Building a puzzle
- Troubleshooting your puzzle





What is a Puzzle?

What Is a Puzzle?

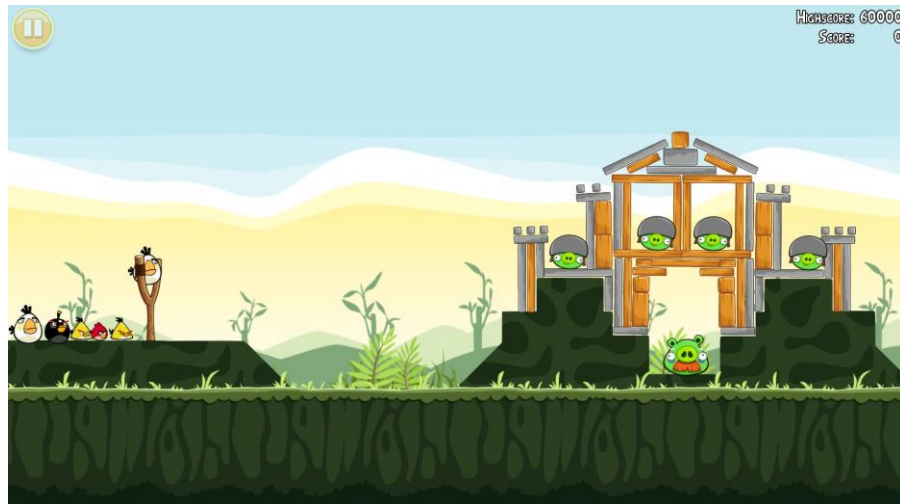
"A puzzle is a game with a dominant strategy."

*"Games are played to win.
A dominant strategy is when choices are offered
to a player, but one of them is clearly better
than the rest."* - Jesse Schell

What Is a Puzzle?

A challenge – but not a competitive challenge.

Makes the player stop and think





What Makes a Puzzle Good?

What Makes a Puzzle Good?

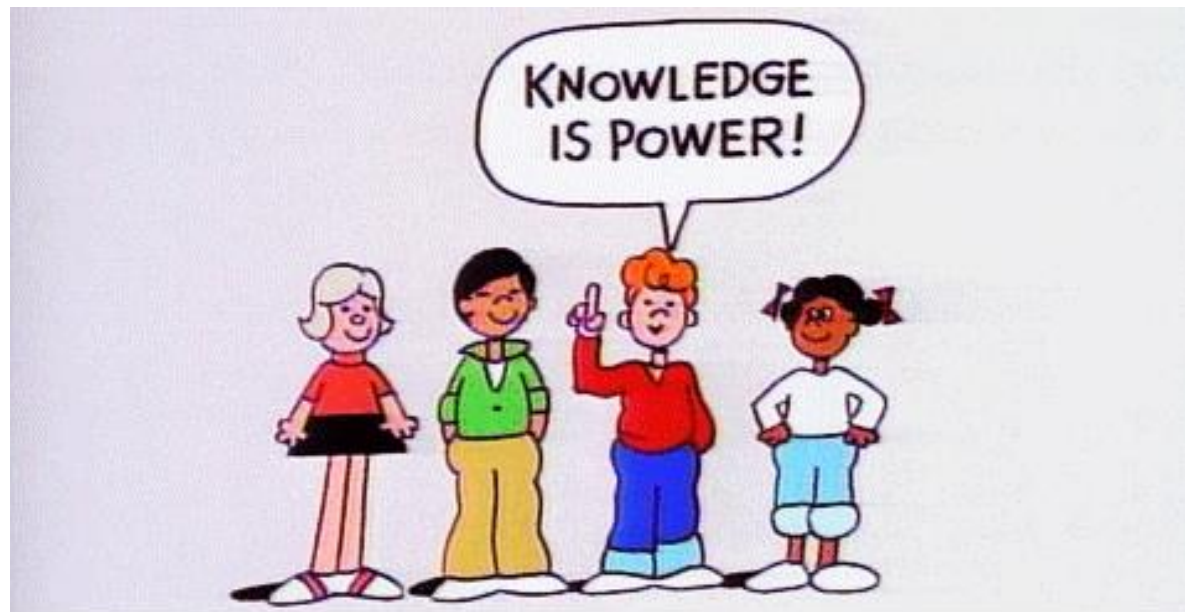
Fun.

...from Challenge:

- The player feels a sense of trust and respect from the designer
 - The player is invited to find a solution, not be handed one
 - The solution is attainable
- The player feels a sense of accomplishment upon completion

What Makes a Puzzle Good?

Learning is Fun

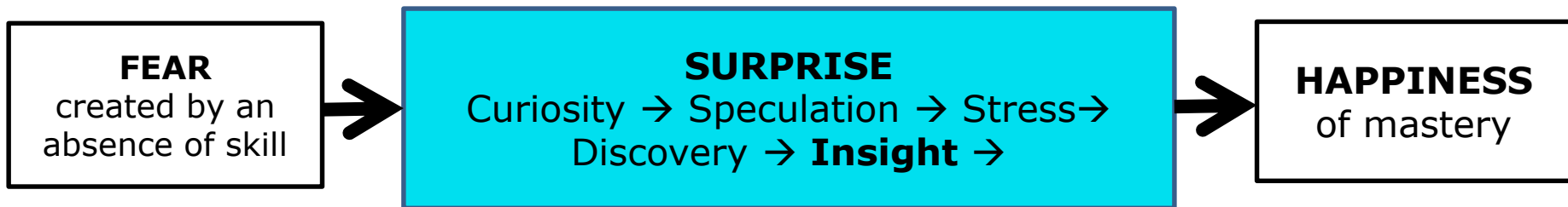


Precision of Emotion: A New Kind of "Fun" Approach

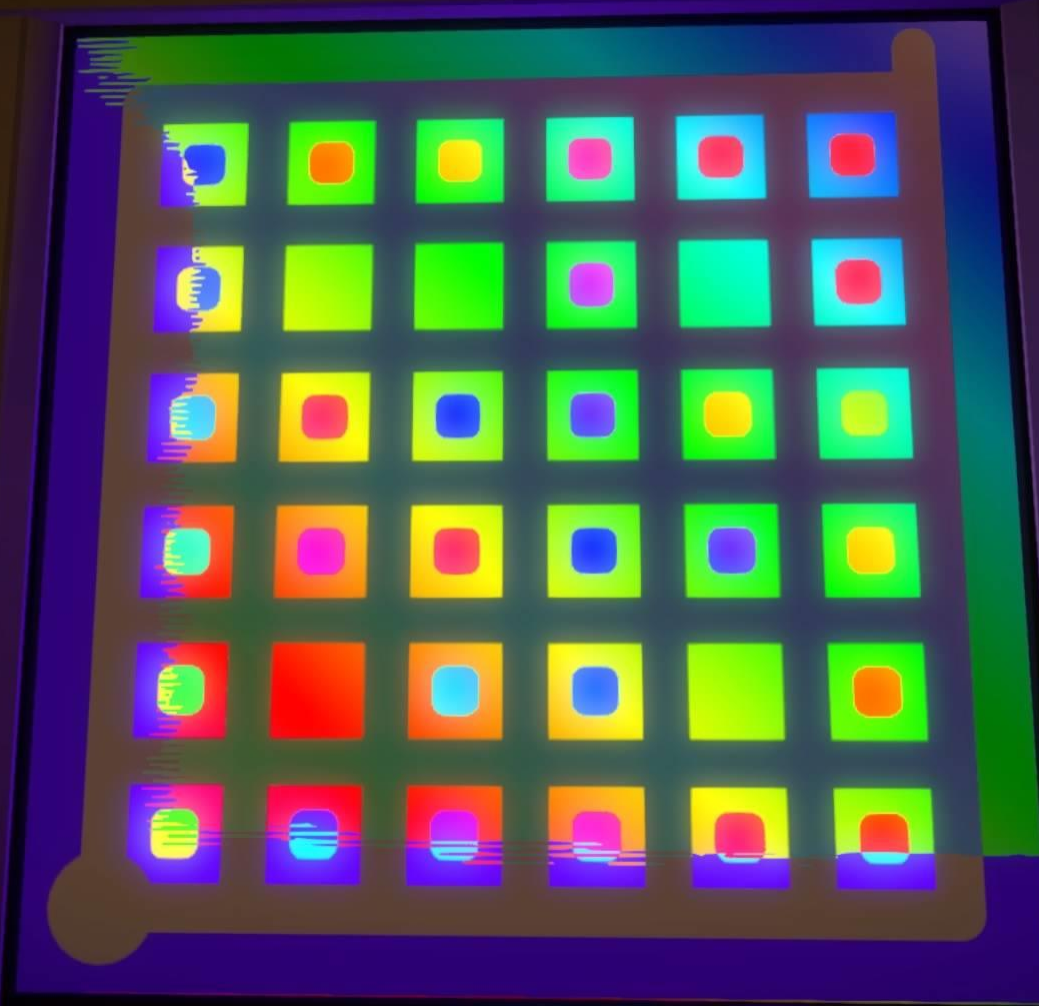
Erin Hoffman, GDC 2015



Sophia: Emotion of Mastery



Puzzle **MASTERY** = finding **INSIGHT**

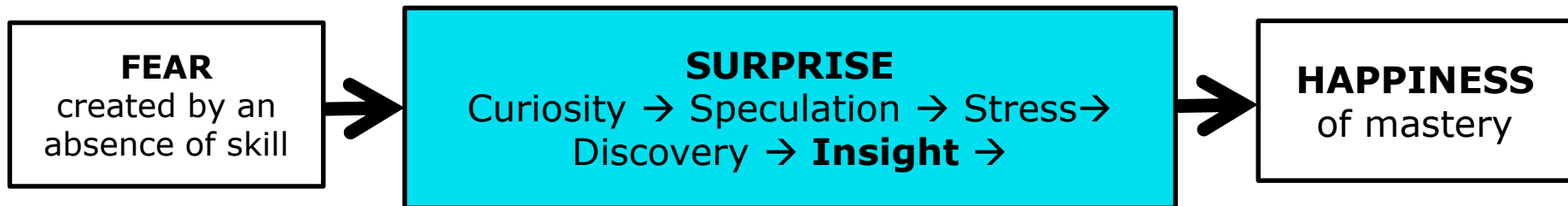








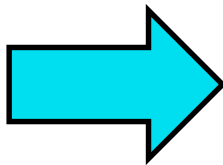




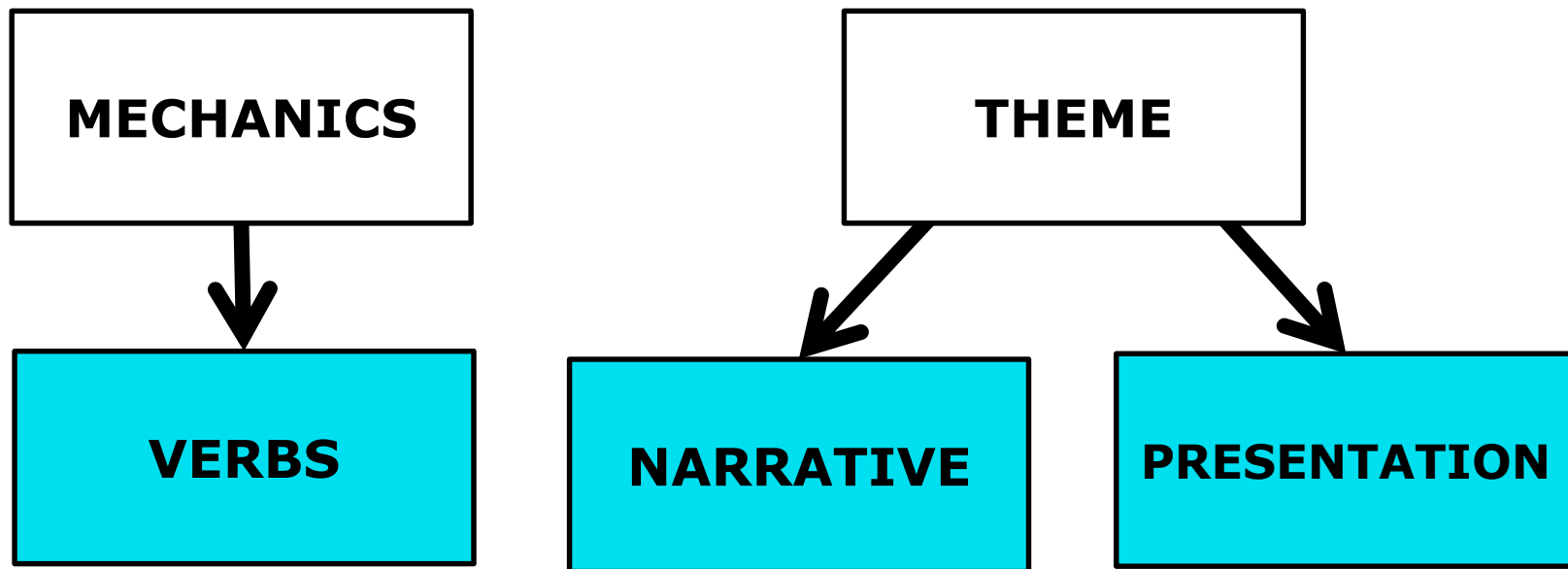


Elements of Puzzles

Elements of a Puzzle



Elements of a Puzzle



Verbs

Homogeneous
“systems-based”



Heterogeneous
“context-based”









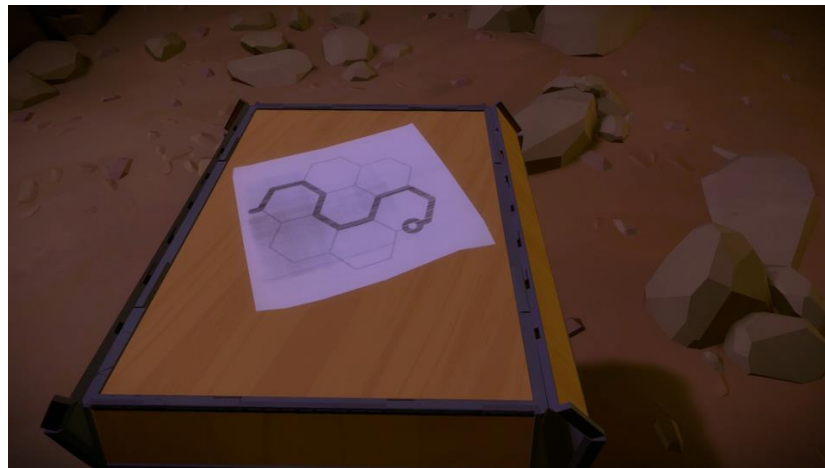


Difficulty Dials

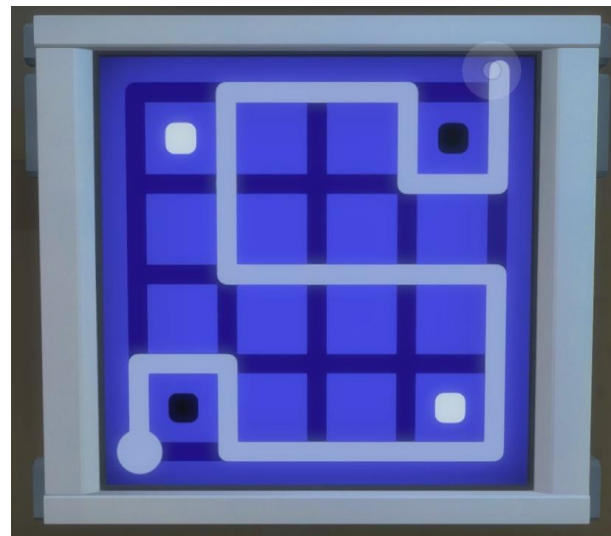


Steps to solve

- Steps/time between feedback



New mechanics or information revealed



New applications of existing mechanics or information



Difficulty Dials

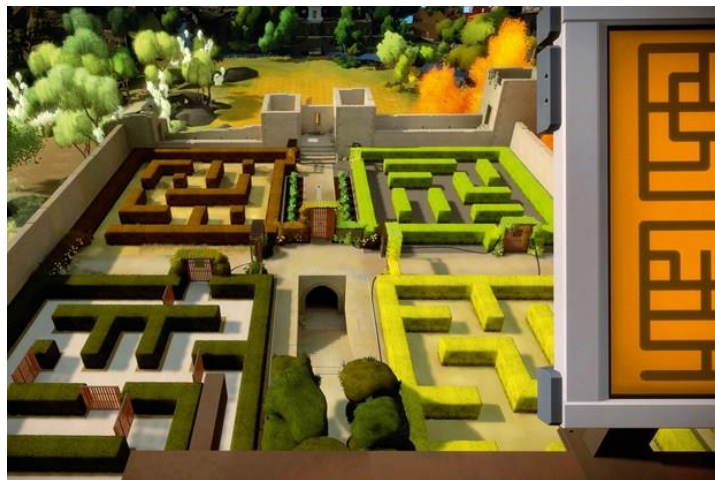
- Steps to solve
- New mechanics/information
- New applications of existing mechanics or information



Difficulty Considerations

- Intended Audience
- Location of puzzle in progression
 - In level
 - In game





Narrative Focused

Challenge Focused



Rational Puzzle Design

Rational Puzzle Design

- Introducing concepts in an orderly fashion
- Preserve macro flow

GAME



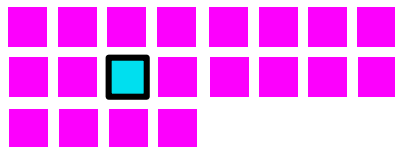
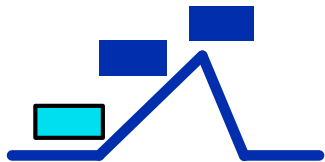
ACT



LEVEL



PUZZLE



Find portal-able
wall

Place portal

Go through portal

Macro: Game

ACT I: Exposition

Chell **performs tests** as instructed by GladOS.

ACT II: Rising Action

Chell breaks free from test area to **escape facility**

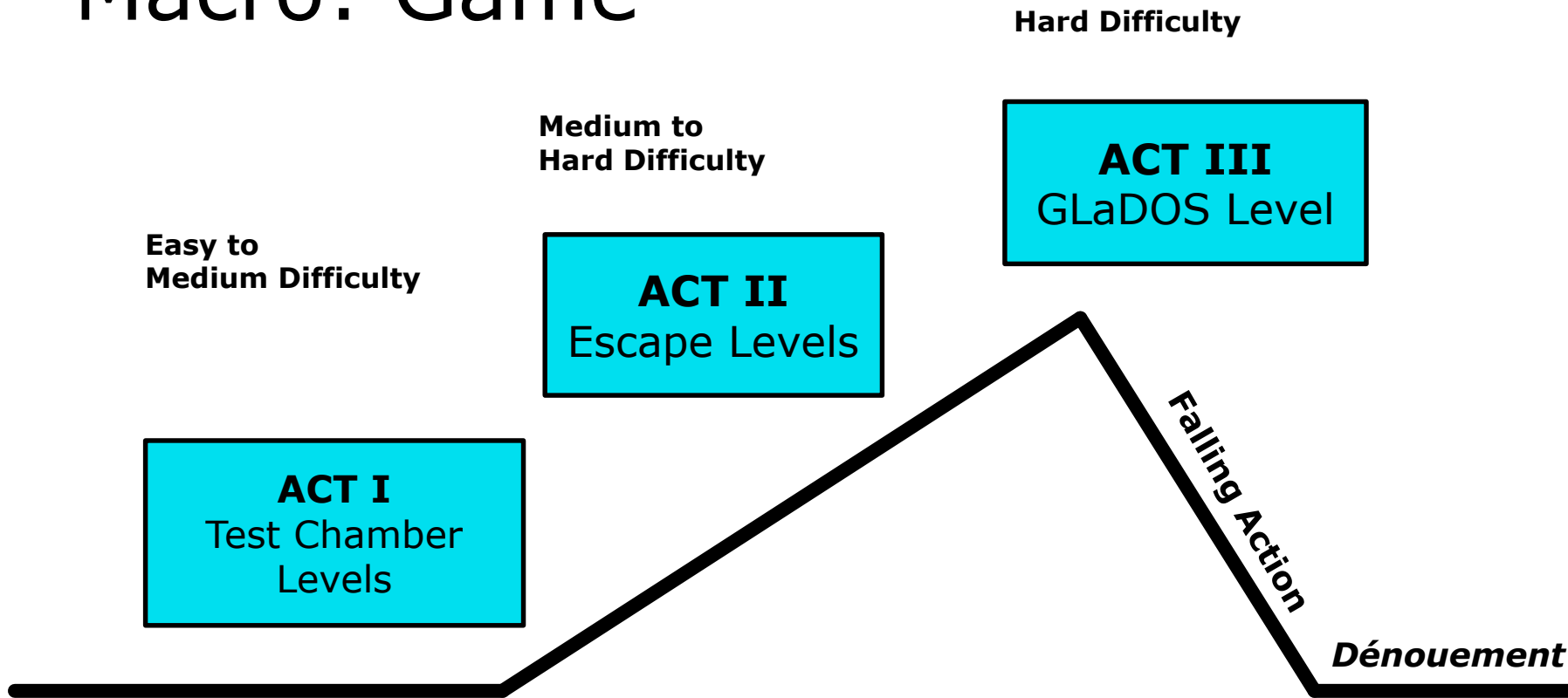
ACT III: Climax

Chell **fights** GLaDOS

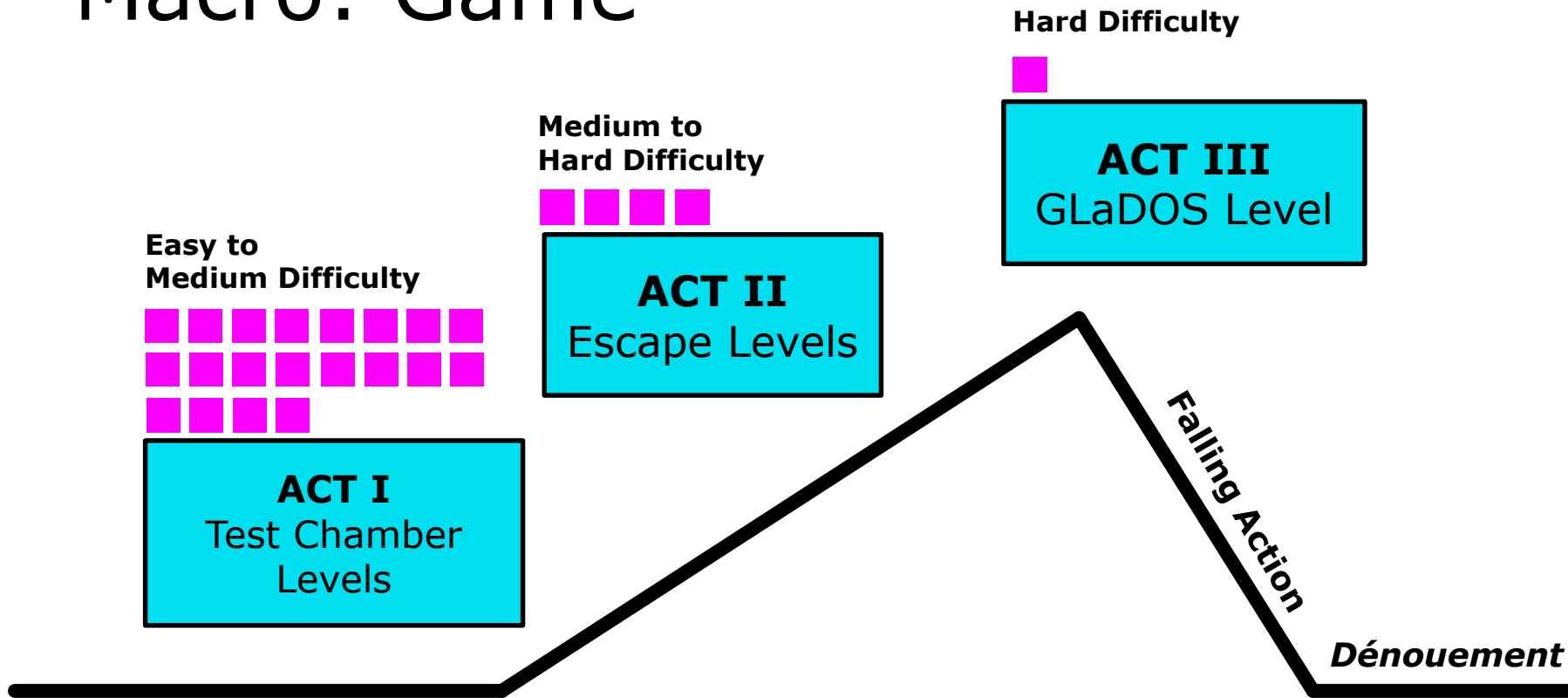
Falling Action

Dénouement

Macro: Game

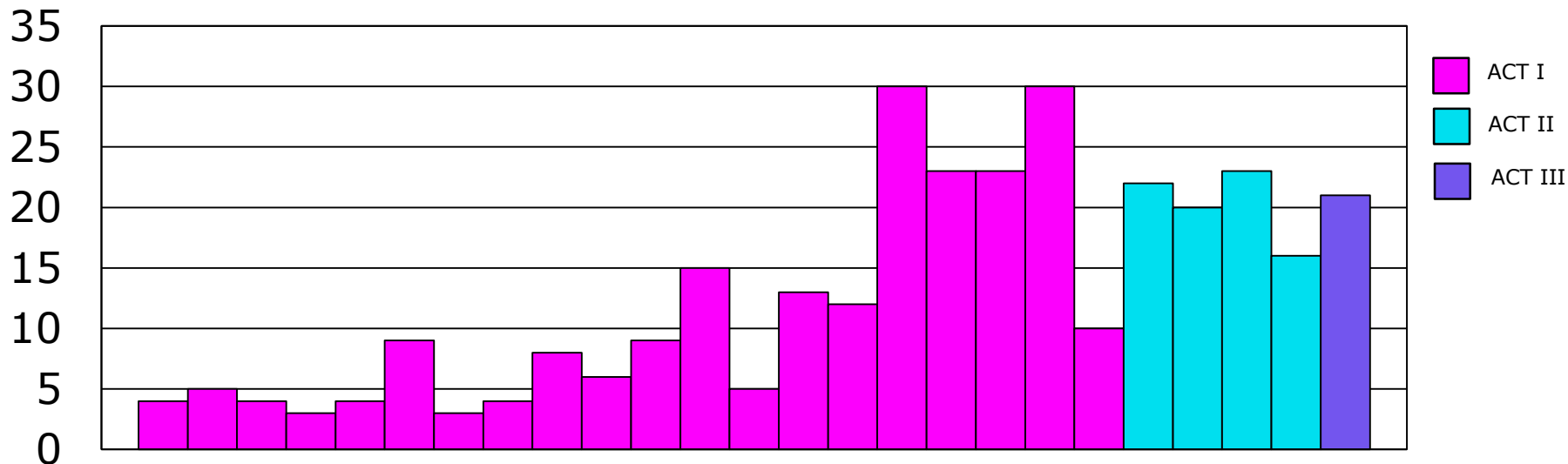


Macro: Game



Macro: Game

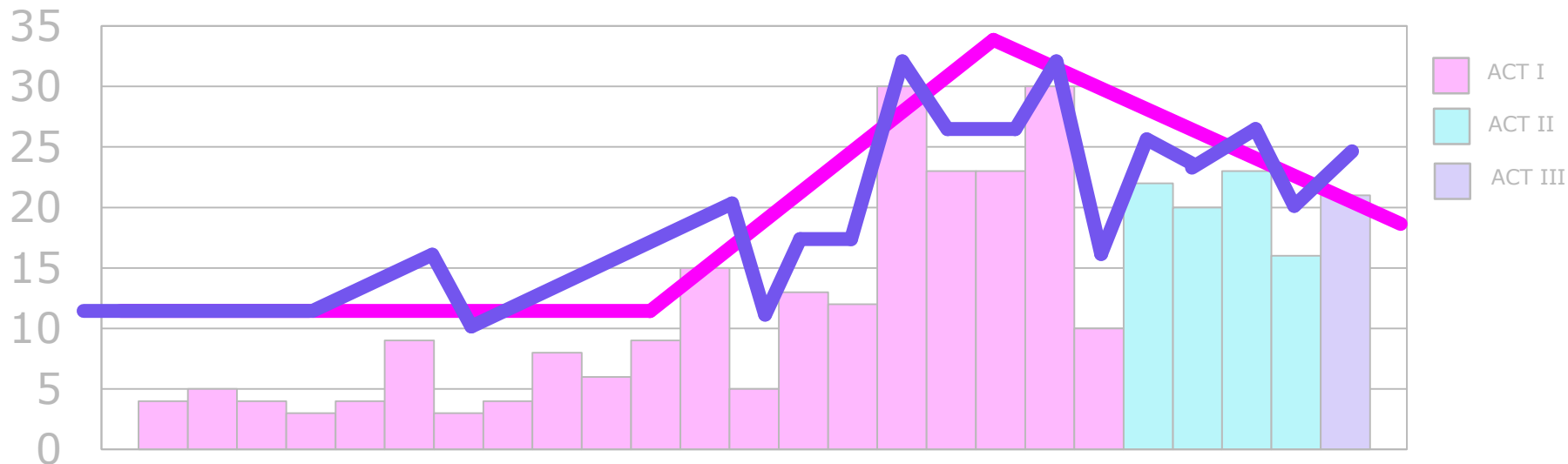
Gameplay Steps to Complete Each Level in *Portal**



*based on level walkthroughs at <http://theportalwiki.com/>

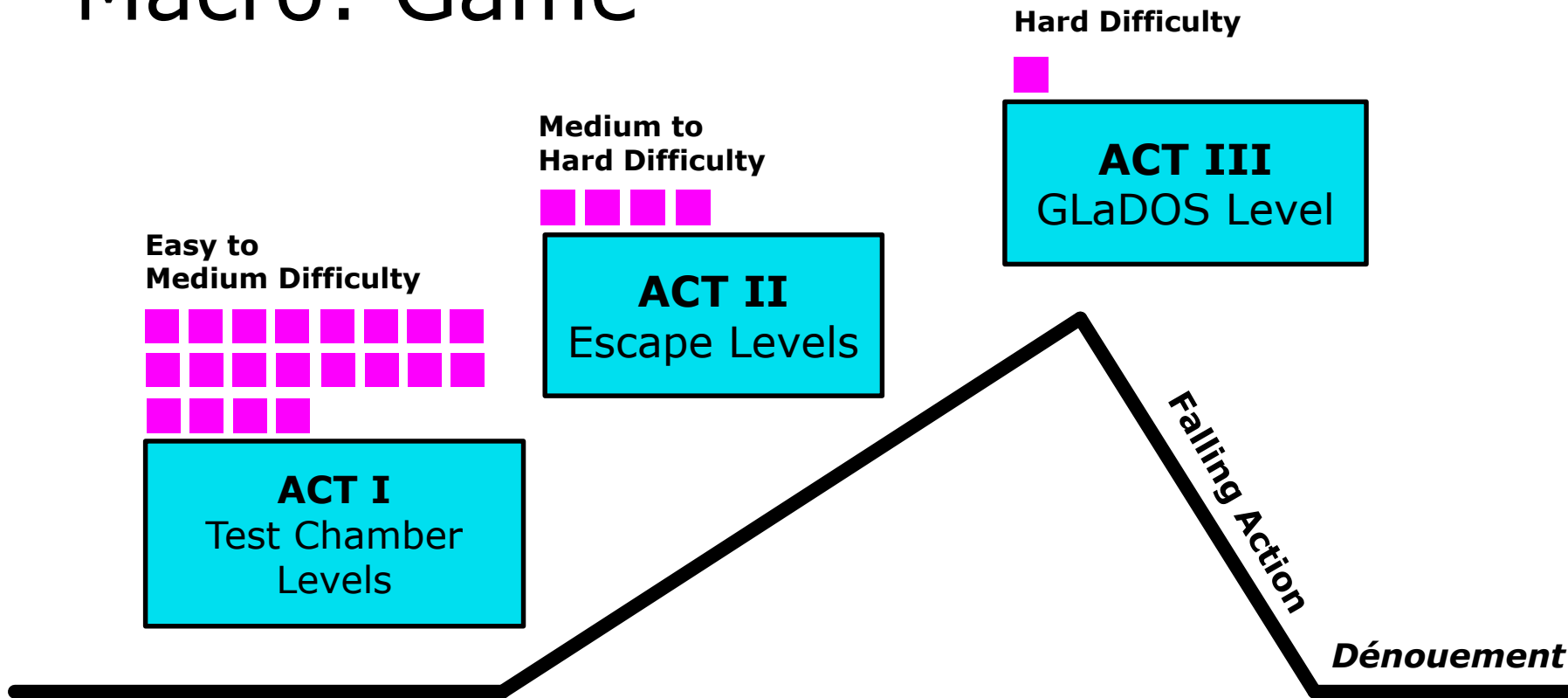
Macro: Game

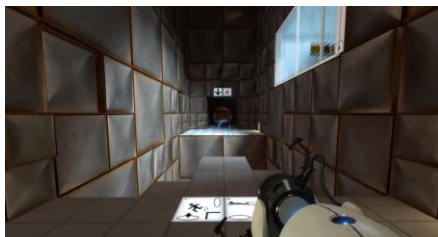
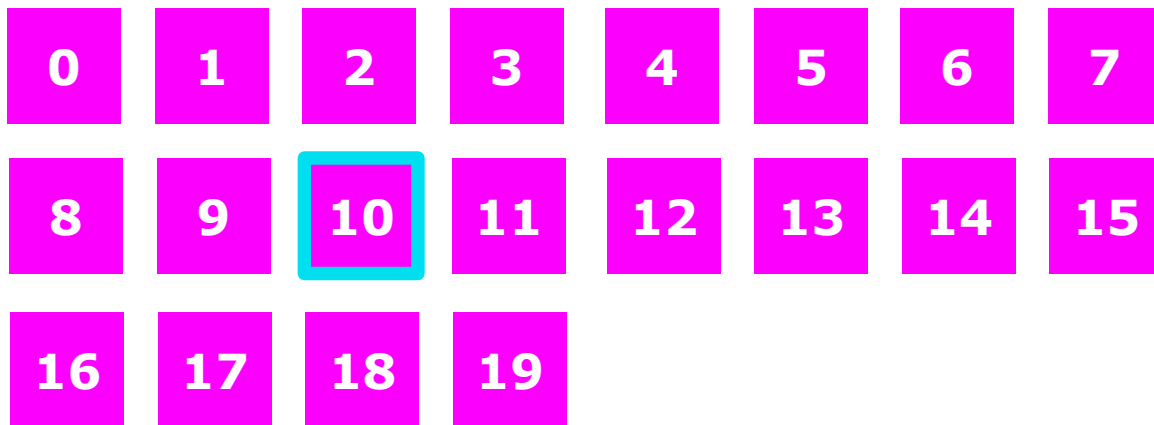
Gameplay Steps to Complete Each Level in *Portal**

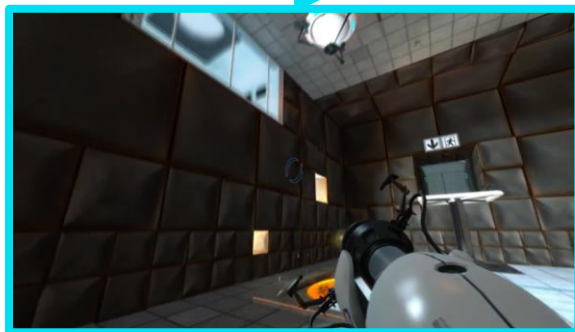
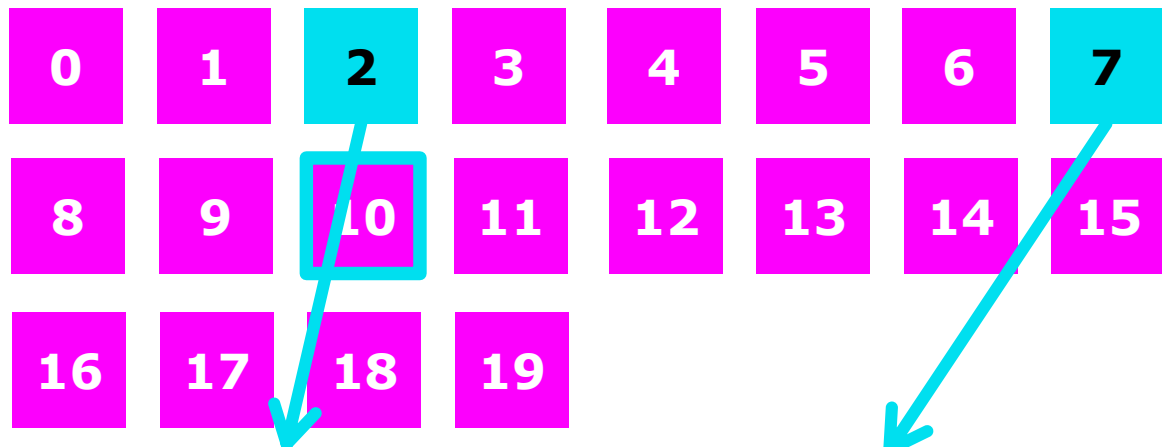


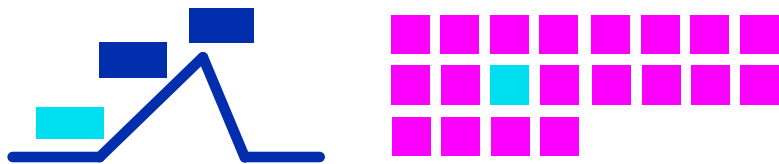
*based on level walkthroughs at <http://theportalwiki.com/>

Macro: Game









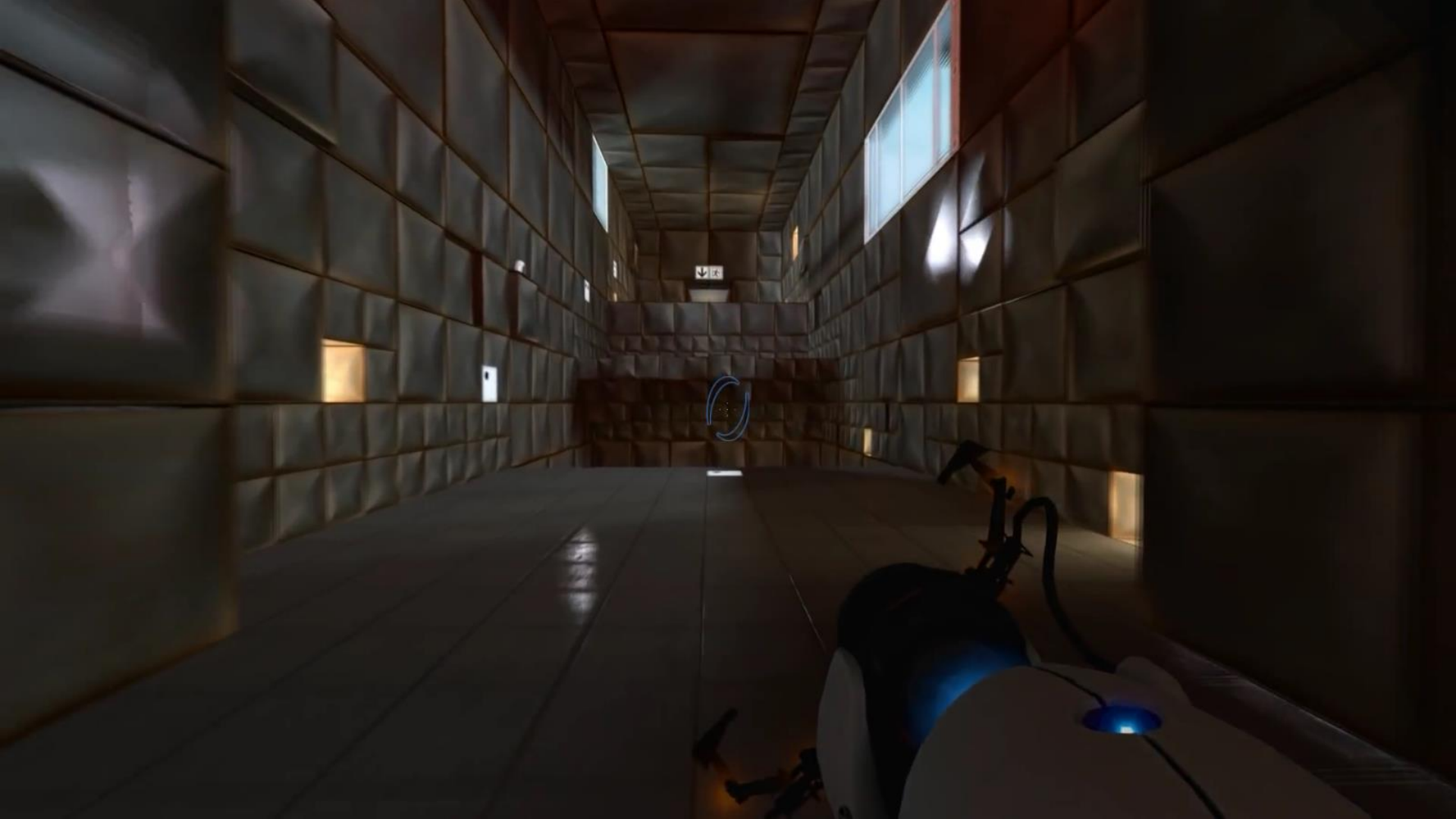
Chamber 10









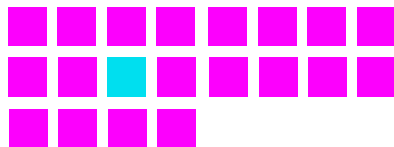












Level
Start

PUZZLE 1

Use blue portal

Go through blue
portal

PUZZLE 2

Find portal-able
wall

Place portal

Go through portal

PUZZLE 3

Find portal-able
wall

Place portal

Go through
portal

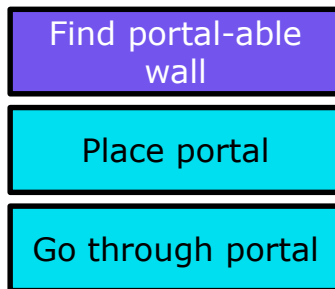
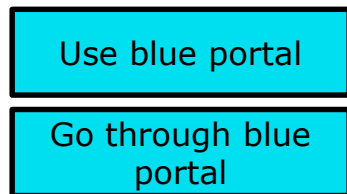
Find portal-able
wall

Place portal

Go through
portal

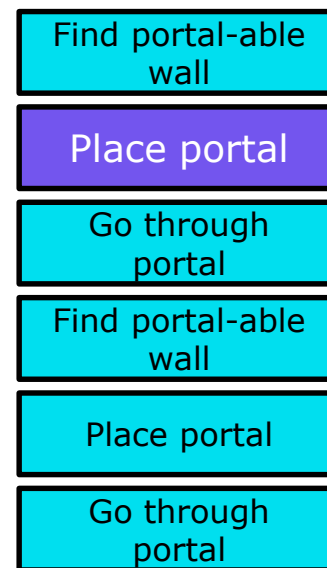
Level
End

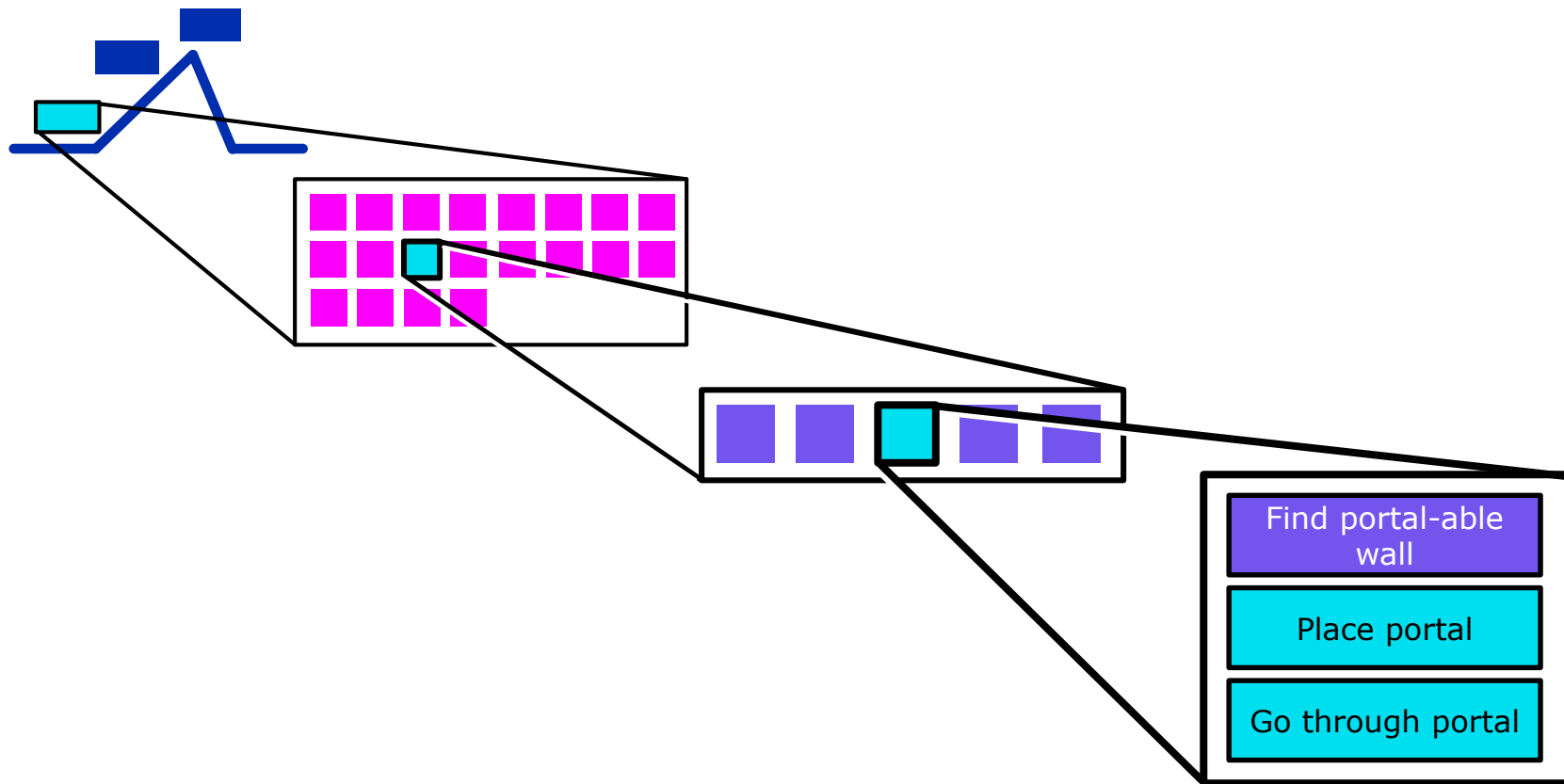
+ Steps

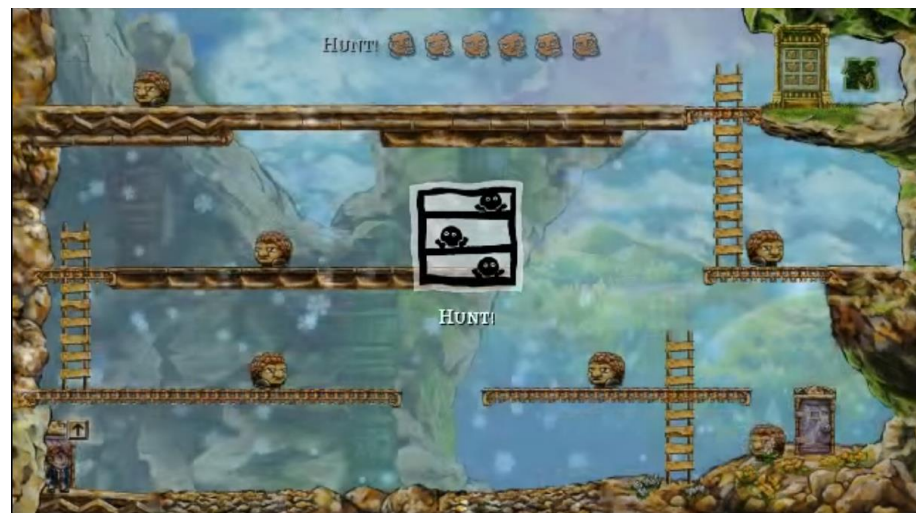


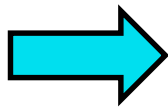
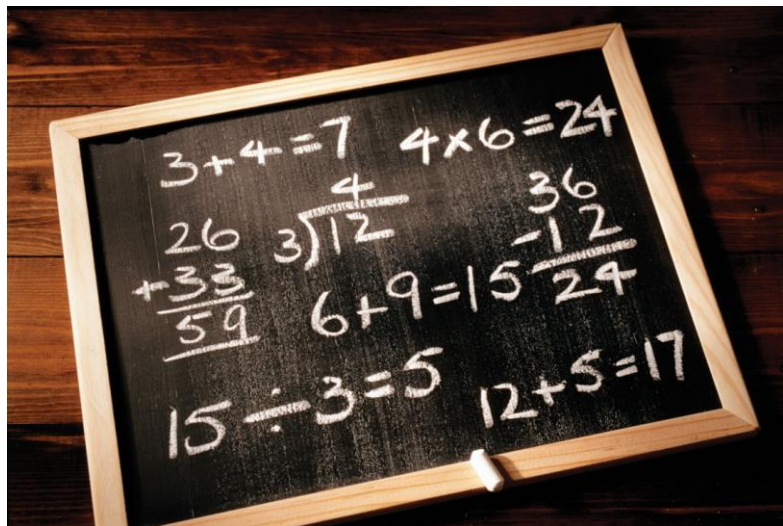
+ Steps

+ New Application







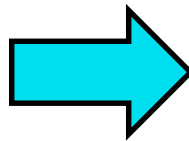


$$\begin{aligned}(x+1)(2x-4)\left(\frac{1}{x+1}\right) &= (x+1)(2x-4)\left(1 - \frac{5}{2x-4}\right) \\ 2x-4 &= (x+1)(2x-4) - 5(x+1) \\ 2x-4 &= 2x^2 - 2x - 4 - 5x - 5 \\ 0 &= 2x^2 - 9x - 5 \\ 0 &= (2x+1)(x-5)\end{aligned}$$



Building a Puzzle

- Know the player's goal
 - Message that goal
 - Message the steps to that goal











These books aren't very interesting.



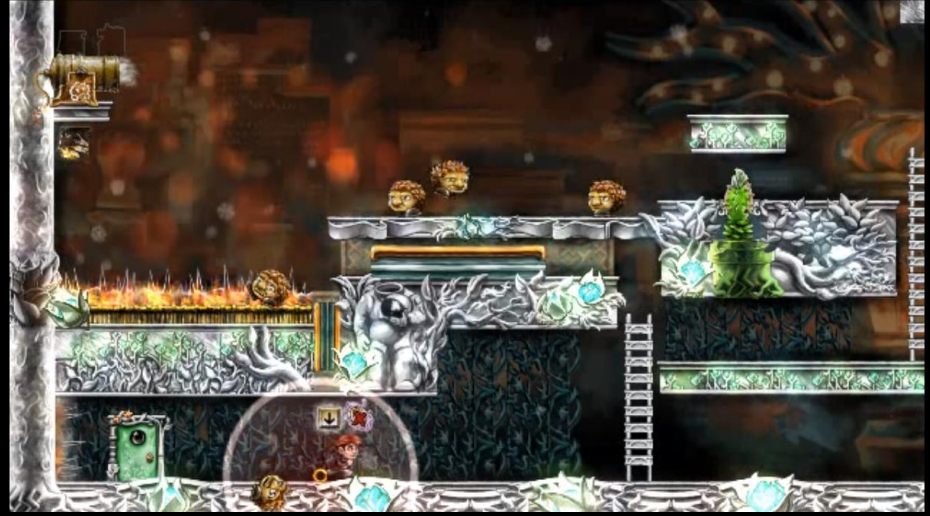
Walk to
Push
Pull
Give
painting
old book
whip

Open
Close
Look

Walk to
Pick up
What is

Use
Turn on
Turn off
small key
Grail Diary

Talk
Travel



Chunking:

process of taking individual pieces of information (chunks) and grouping them into larger units.



- Give the player feedback
 - Reward and encourage the player when they are on the right track
 - Communicate to the player when they've hit a dead end

I can't use these things together.





Shoot
Engineer

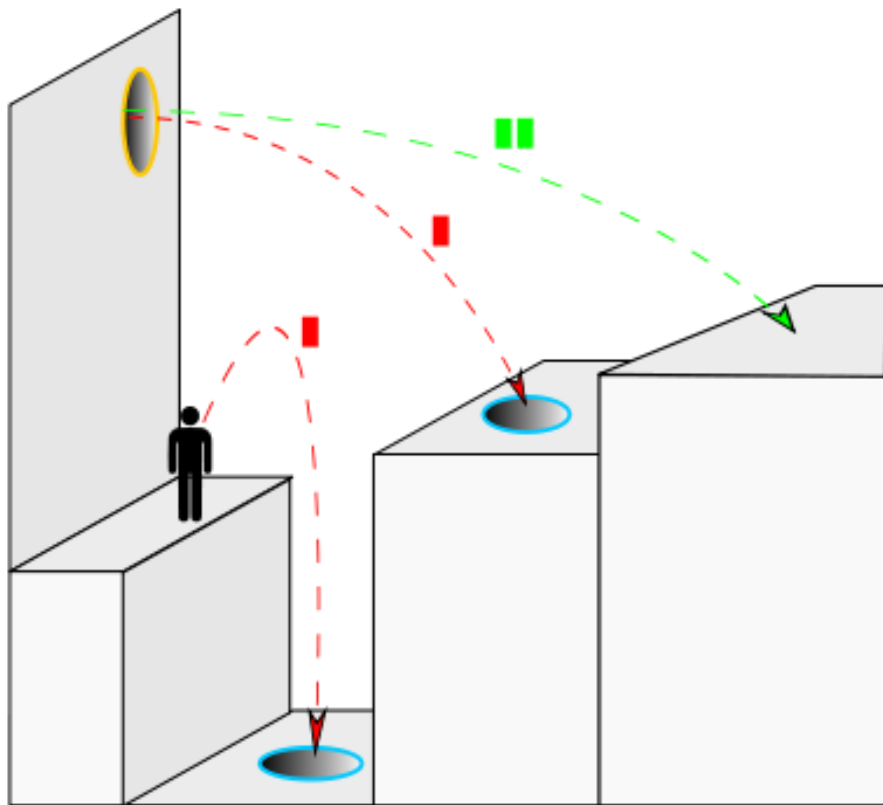


Examine
Engineer

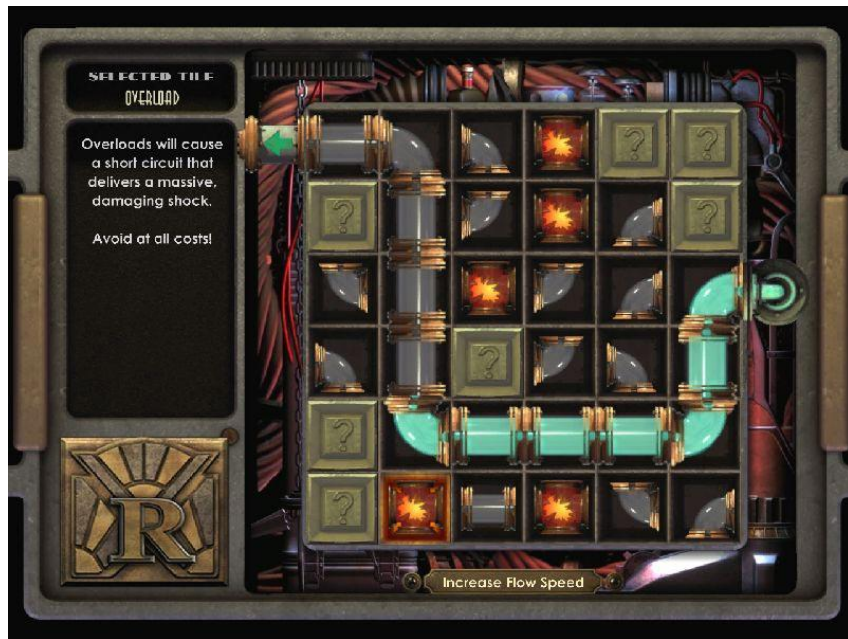
- Be kind
 - Repetition isn't fun
 - Check your skill checks







- Integrate story into puzzles
- Go to the story for inspiration



The Golden Rule



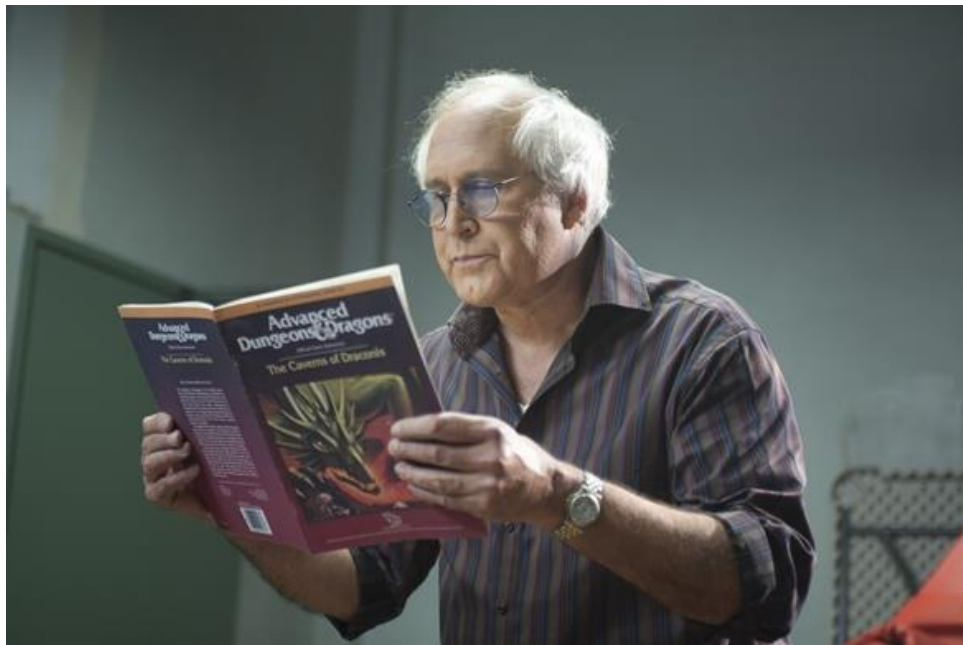
Puzzles
should be
fun for the
player, not
the designer



Troubleshooting

A Brief Word About User Testing

- Do it as much as you can.
- Seriously, do it as much as you can.
- Capture as much of your testers' thinking processes as possible.
- Note where players get stuck – look at your self-check to examine why.



Player says...

- “Too Easy”

- Was the player given a chance to solve it themselves?
- Just a Lock and Key?
 - Not enough steps
 - No variation in verbs/applications

- “Too Hard”

- Is info given to solve puzzle?
 - How long ago?
 - Can it be re-accessed?
- Is the goal clear to the player?
 - Level layout and visuals make the path clear
- Check your dials:
 - Too many steps?
 - New mechanic not being taught well?
 - Mechanic being use in a new way that is unintuitive?

Things to Remember

- A good puzzle challenges the player, without hand-holding or being unfair
 - fun for the player, not the designer
- Puzzles combine a game's theme and mechanics, and rely on the consistency of each to make sense.
- Look at your puzzle in the context of the game as a whole to judge its difficulty.
- Watch others play your puzzle to check for assumptions you may have made.

Helping Your Players Feel Smart: Puzzles as User Interface

Randy Smith

<http://www.gdcvault.com/play/1333/Helping-Your-Players-Feel-Smart>

The Rational Design Handbook: An Intro to RLD

Luke McMillan

http://www.gamasutra.com/blogs/LukeMcMillan/20130806/197147/The_Rational_Design_Handbook_An_Intro_to_RLD.php

Precision of Emotion: A New Kind of "Fun" Approach

Erin Hoffman

<http://www.gdcvault.com/play/1022215/Precision-of-Emotion-A-New>

The Arcane Art of Puzzle Design

Noah Falstein

<http://www.gdcvault.com/play/1017978/The-Arcane-Art-of-Puzzle>

Puzzle Writing: Best Practices

Clara Fernandez-Vara

<http://www.gdcvault.com/play/1013851/Puzzle-Writing-Best>

Tavinor, Grant. *The art of video games*. Malden, MA: Wiley-Blackwell, 2009

<http://gamedevelopment.tutsplus.com/tutorials/port-al-2-level-design-creating-puzzles-to-challenge-your-players--gamedev-4828>

Rational Design: The Core of Rayman Origins

Chris McEntee

http://www.gamasutra.com/view/feature/167214/rational_design_the_core_of_.php

Creating compelling puzzles in *Rise of the Tomb Raider*

Chris Kerr

http://www.gamasutra.com/view/news/260637/Creating_compelling_puzzles_in_Rise_of_the_Tomb_Raider.php



Questions?



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