Lecture 24

Level Design

What is Level Design?

- Layout of **game geography**
  - Location and relationship of challenges
  - Movement of dynamic features (e.g. NPCs)

- Understanding of **player capabilities**
  - Abilities, mechanics available to the player
  - Assumptions of current player skill level

- Layout of **player progression**
  - How the player should move through the game
  - How the player visualizes this progression

Aspects of Game Design

- Games as **Exploration**
  - Focuses on game *geography* and *capabilities*
  - Typically involves heavy storyboarding

- Games as **Education**
  - Train player skill and understanding
  - Focuses primarily on *player capabilities*

- Games as **Storytelling**
  - Focuses on *player progression*
  - Most challenging element of game design

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  - Focus...
  - Most ...ment of game design

For a later lecture

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Players Want to Explore the World

- Exploring the **physical space**
  - What happens when I go here?
  - **Example**: Any western RPG
  - But does not require complex game world

- Exploring the **ludic space**
  - What happens when do this action?
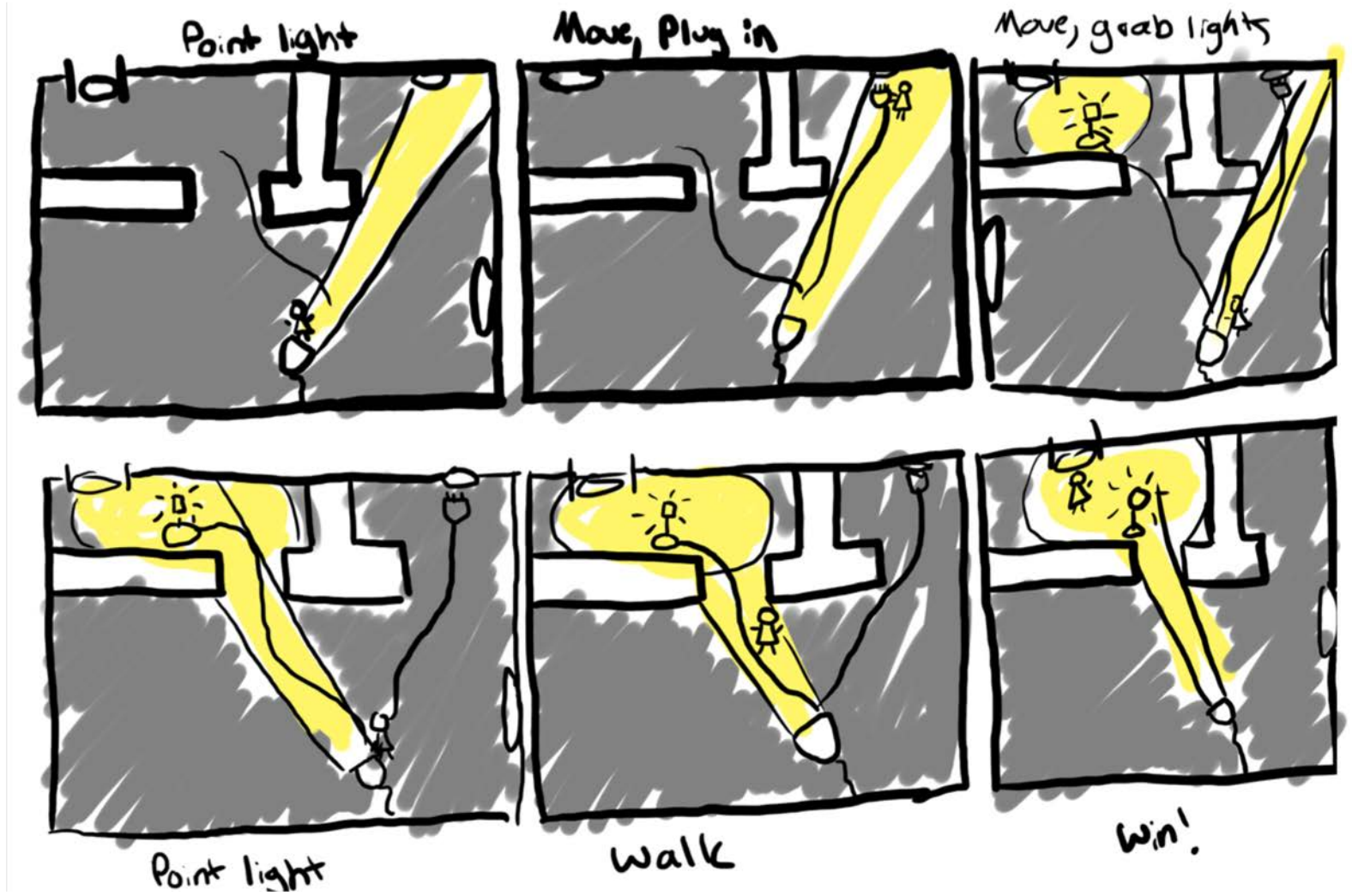 - Requires deep, complex interactions
  - **Example**: Buckets in Skyrim

Level Design

Storyboarding

- Diagrams player action throughout level
  - Different from film storyboarding
  - Currently a bunch of *informal practices*

- **Embodied Action**
  - Action that is tied to a character/avatar
  - Typically maps player movement in level

- **Disembodied Action**
  - Action corresponding to UI elements
 - **Example**: Buttons, menus

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Embodied Action: Single Scene

Level Design
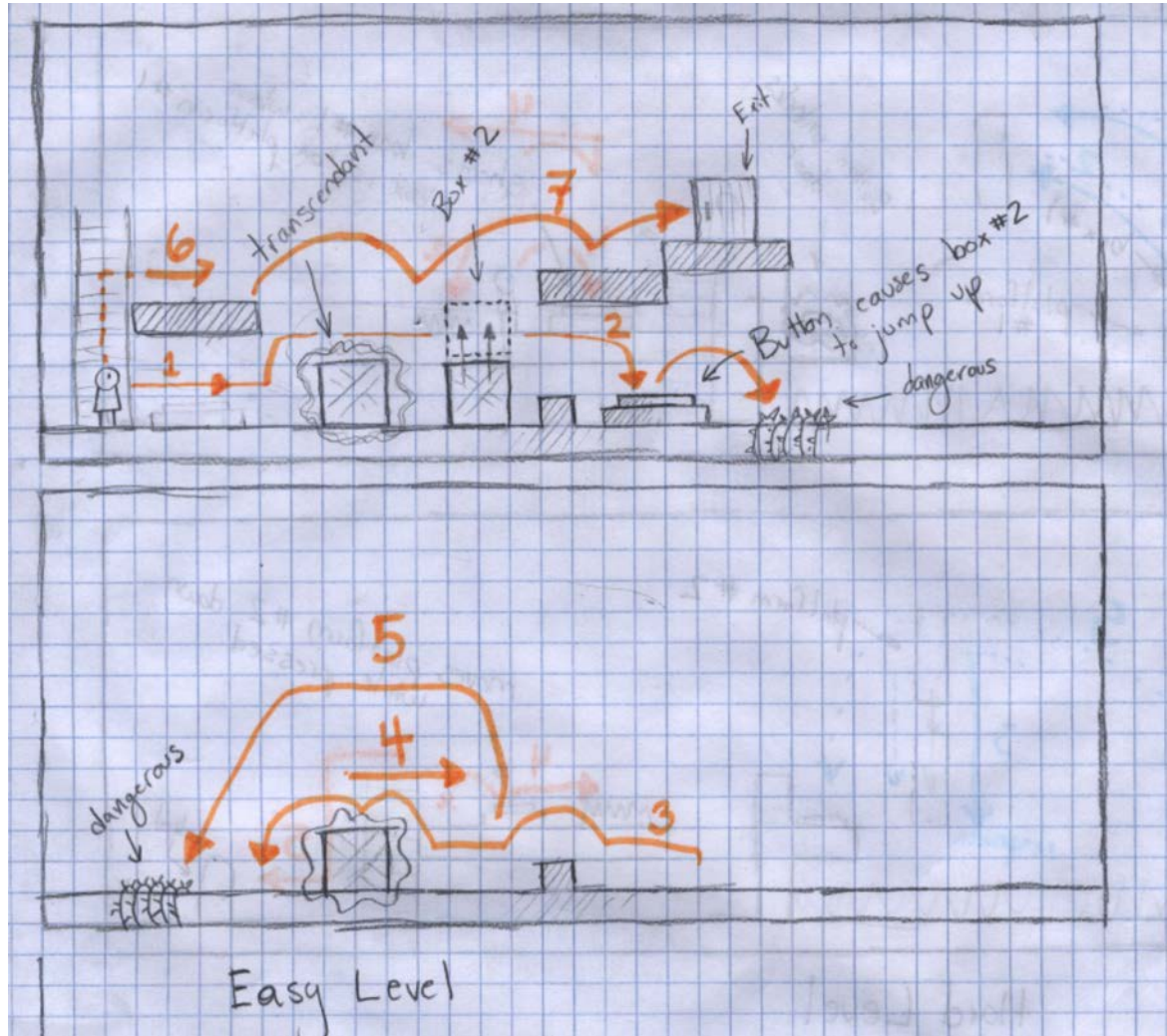
Embodied Action: Multiple Scenes
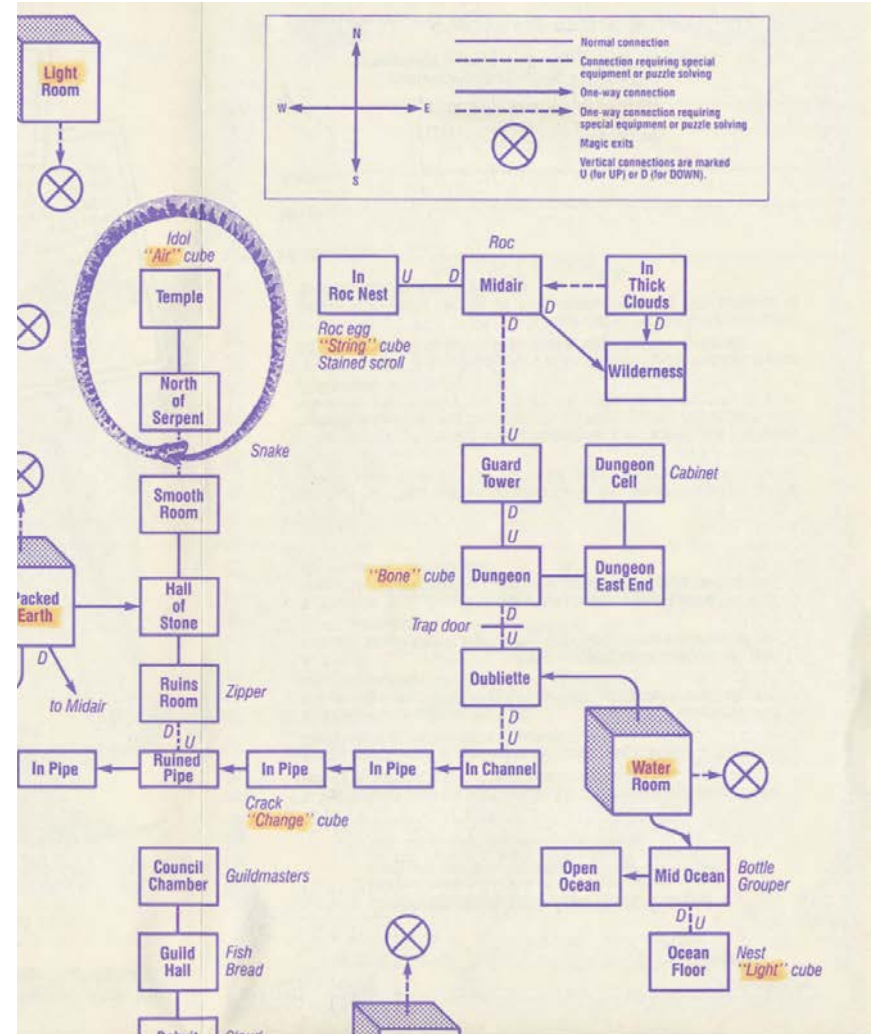
Level Design

Disembodied Action: Cause and Effect

- **Draw the initial scene**
  - Could be the entire level
  - Zoomed in portion of screen
  - Must capture area that will be affected by the action

- **Indicate the action**
  - Draw mouse pointer
  - Indicate gamepad button
  - Annotate with a "tool tip"

- **Draw the action effect**
  - Change in initial scene
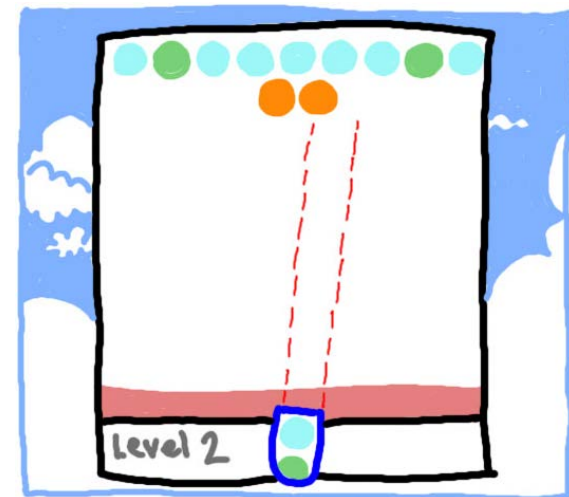
Level Design

Game Geography

- Relations of game challenges
  - Multiple challenges in a level
  - Flow of level progression

- Easiest to design **discretely**
  - Well defined player paths
  - Some deviation allowed
  - Storyboard indicates paths

- Ensure **meaningful choice**
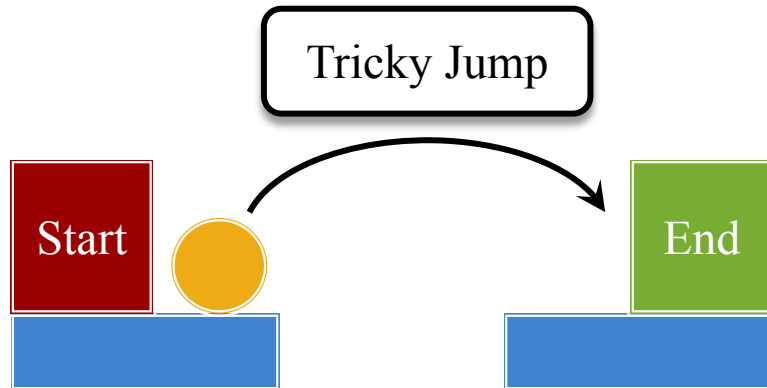 - More than one path works
  - Balance the risk vs. reward

Design Patterns

- Design uses building blocks
  - Mechanic/challenge pairs
  - Start and end location
  - String together to make level

- Key building block features
  - Requires verb/interaction
  - Must be possible to *fail*
  - Difficulty is *tunable*

- **Patterns** are common blocks
  - Appear many times in game
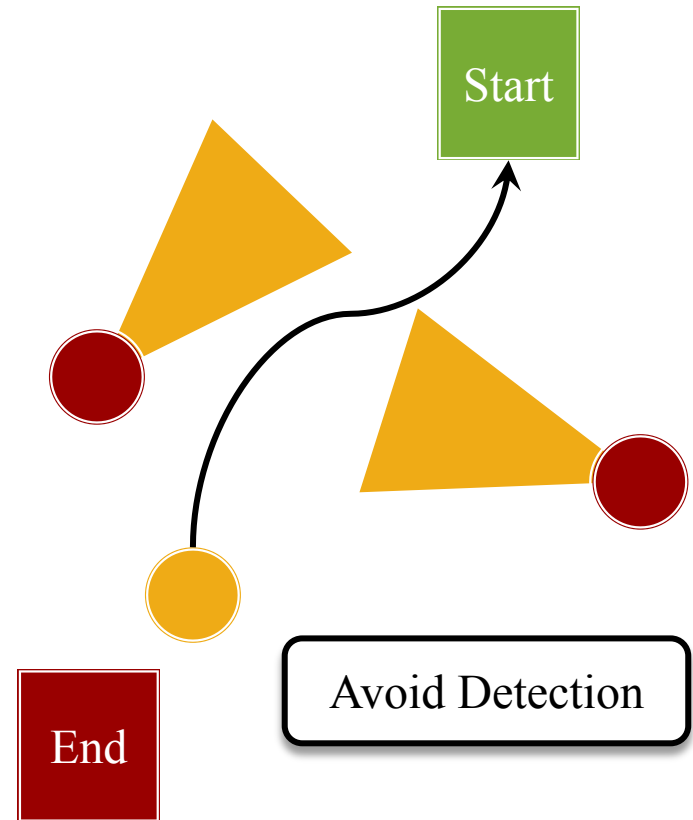 - Even across multiple games

Start

Challenge

End

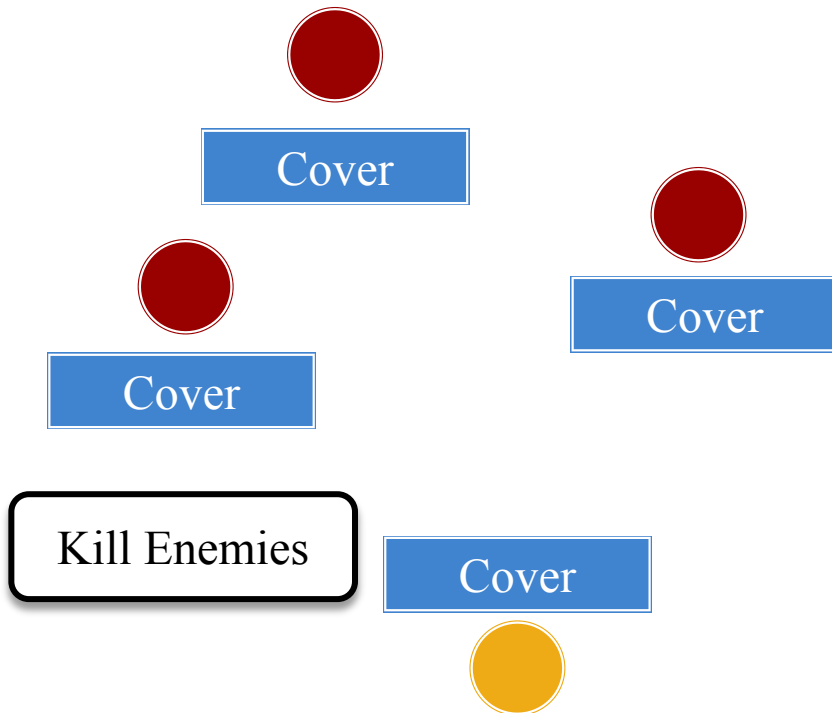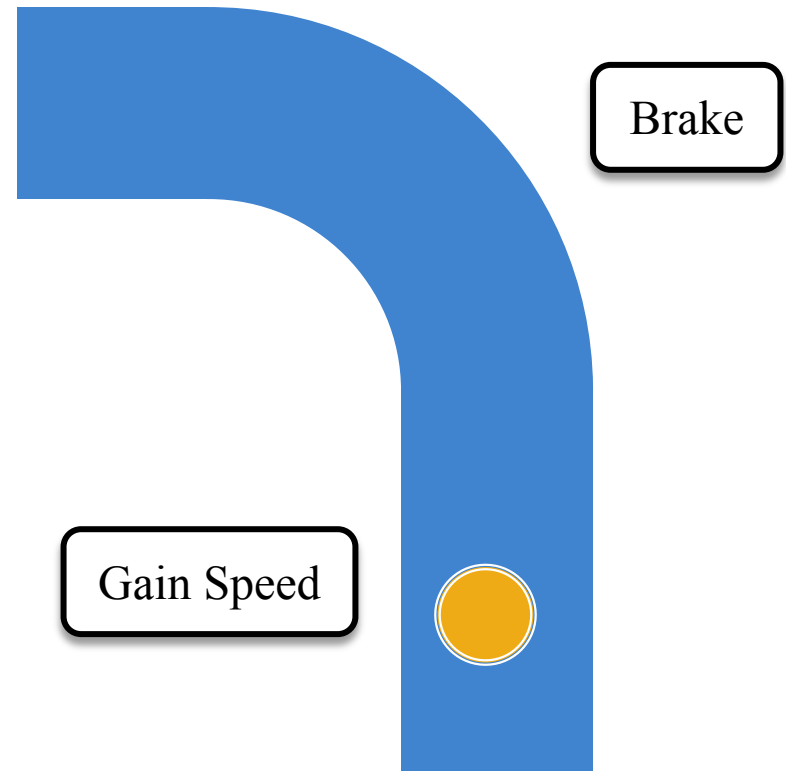the gamedesigninitiative
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Design Pattern Examples

Platformer

Tricky Jump

Start

End

Stealth Game

Start

End

Avoid Detection

Level Design

Design Pattern Examples

Shooter/Action Game

Cover

Cover

Cover

Kill Enemies

Cover

Racing Game

Brake

Gain Speed

Level Design

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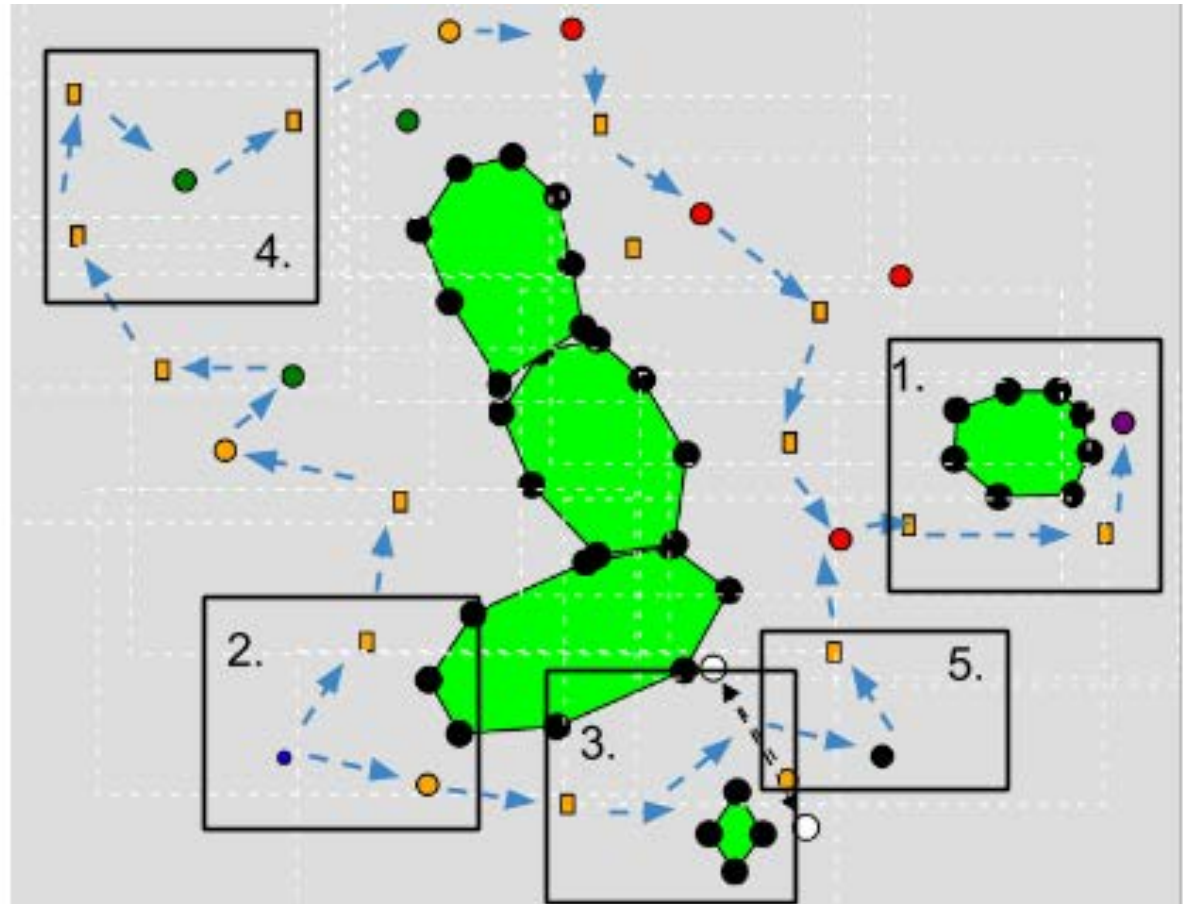
Dash: Basic Design Patterns
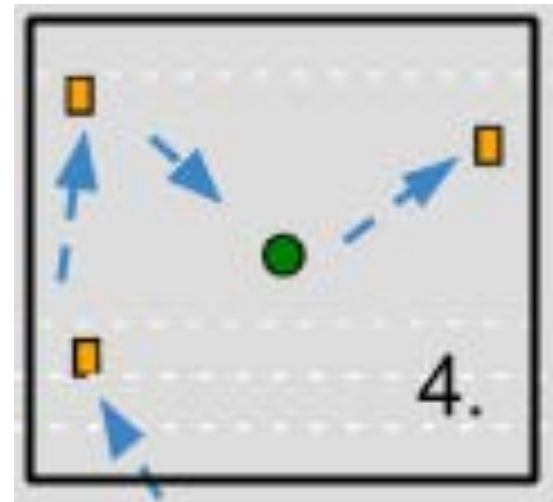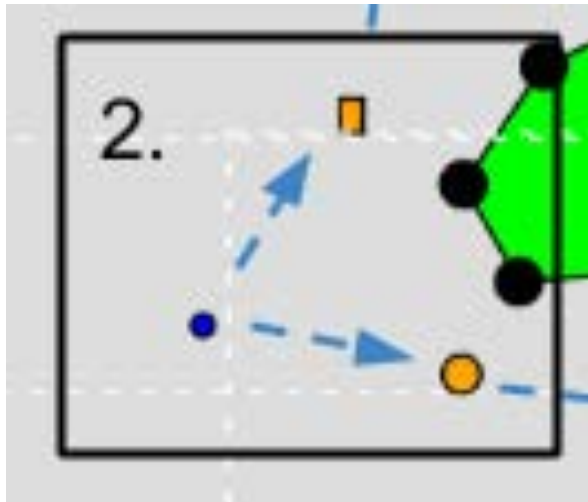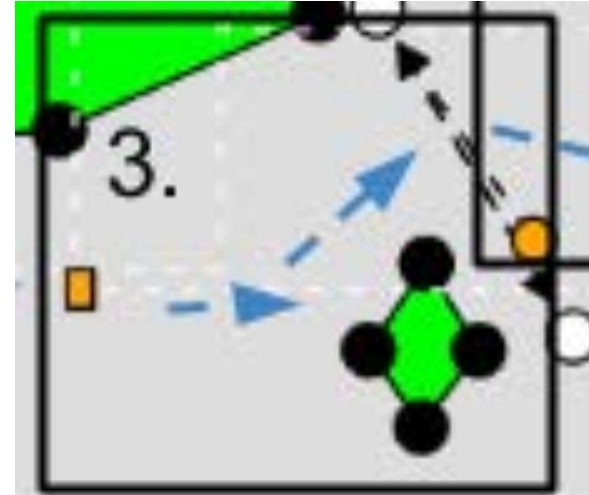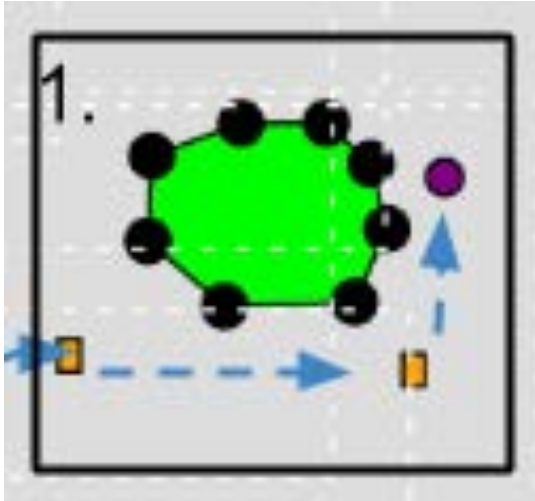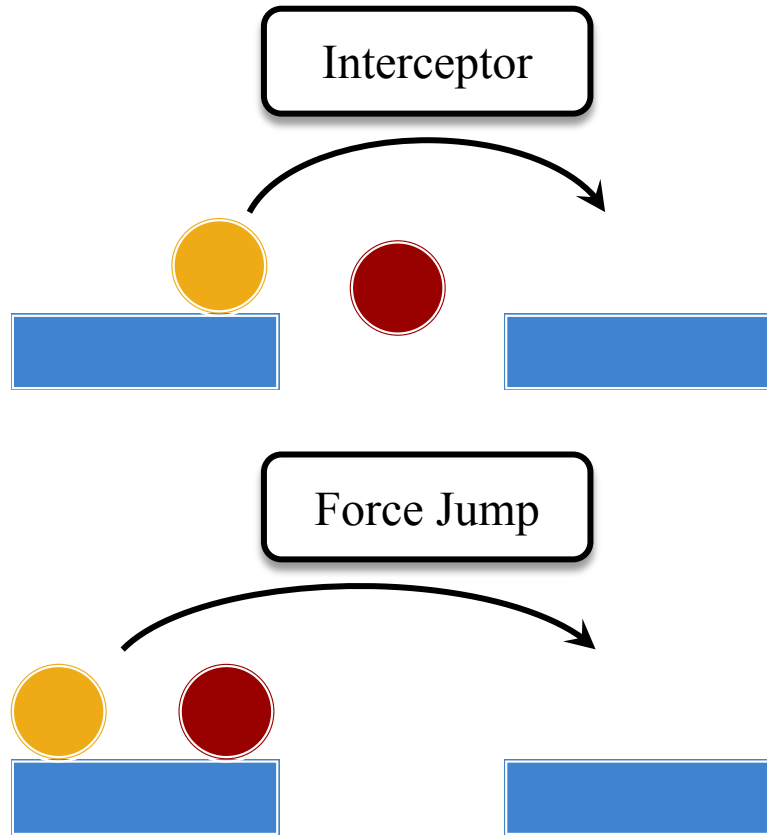
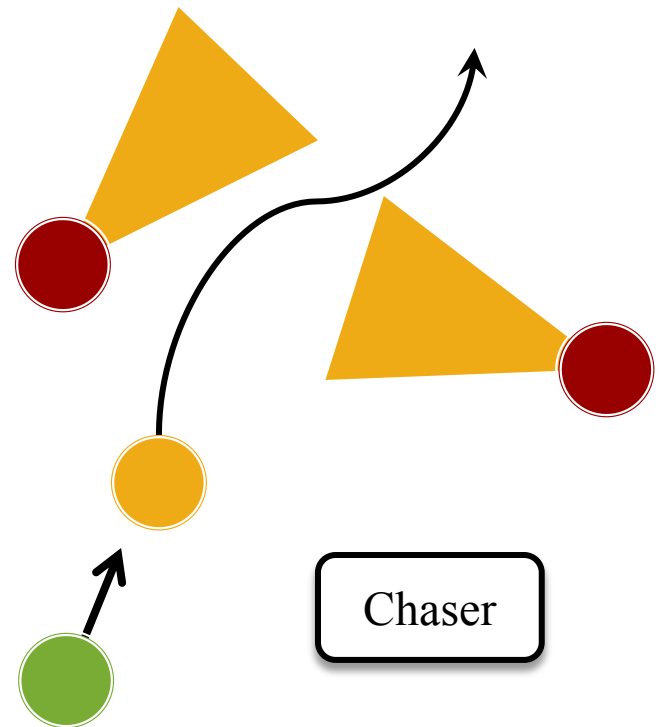# *Dash*: Putting it All Together

Level Design

Composite Patterns

- Piecewise design creates a very linear feel
  - Pattern A followed by Pattern B followed by...
  - Player is explicitly aware of building blocks

- **Composite patterns** allow for variations
  - Two patterns combined in the same space
  - Makes original pattern much more difficult
  - Player now has to react to them both

- **Reading:** Extended/Evolutionary Challenge

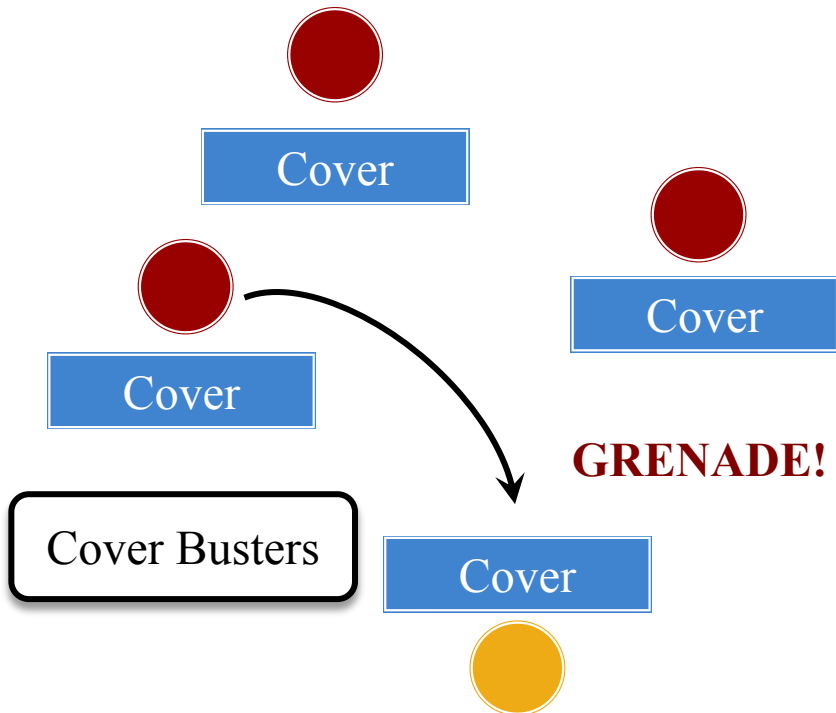# Composite Patterns

Platformer

Interceptor

Force Jump

Stealth Game

Chaser

Level Design

Composite Patterns

Shooter/Action Game

Cover

Cover

Cover

GRENADE!

Cover Busters

Cover

Racing Game

Restrict Positions

Level Design
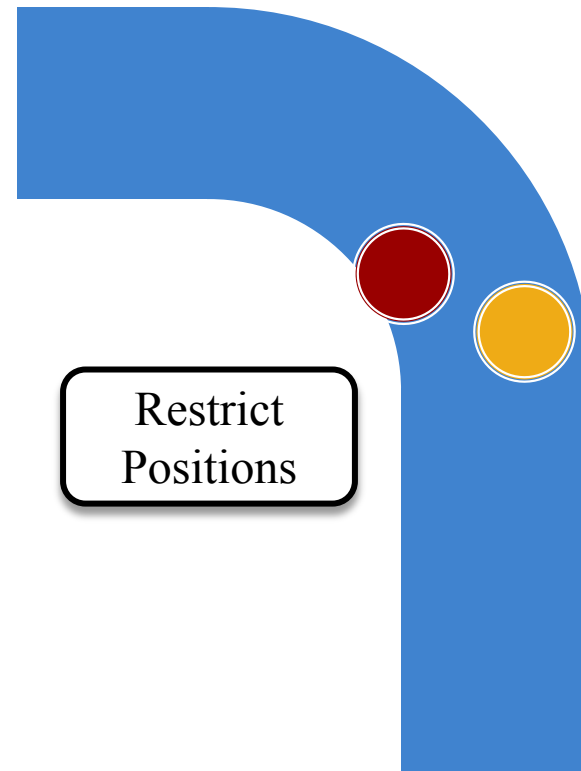
Is Linearity a Problem?

[Image attribution unknown]

FPS map design

1993

2010

Level Design

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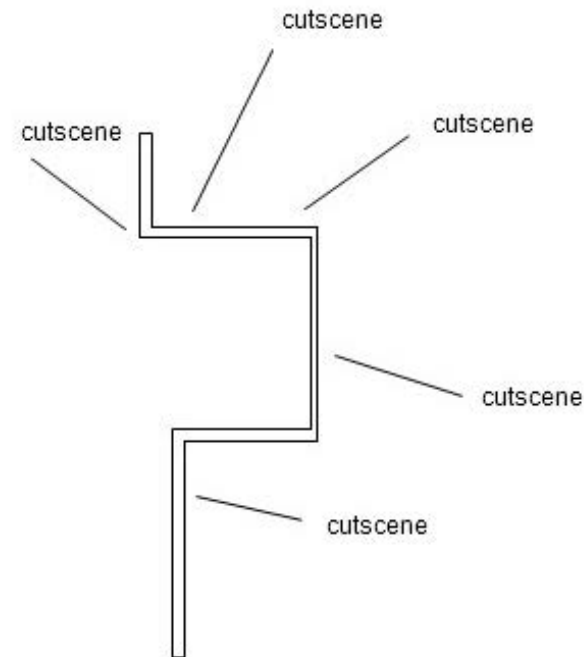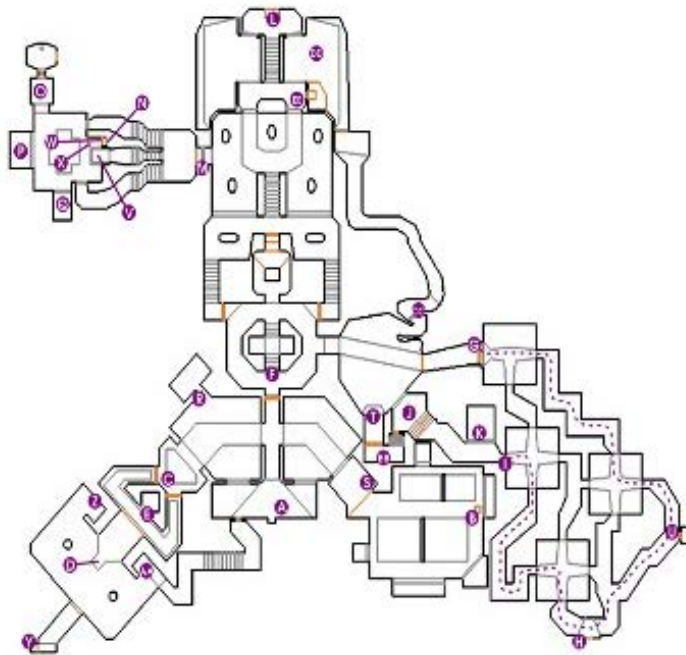
But Actually…
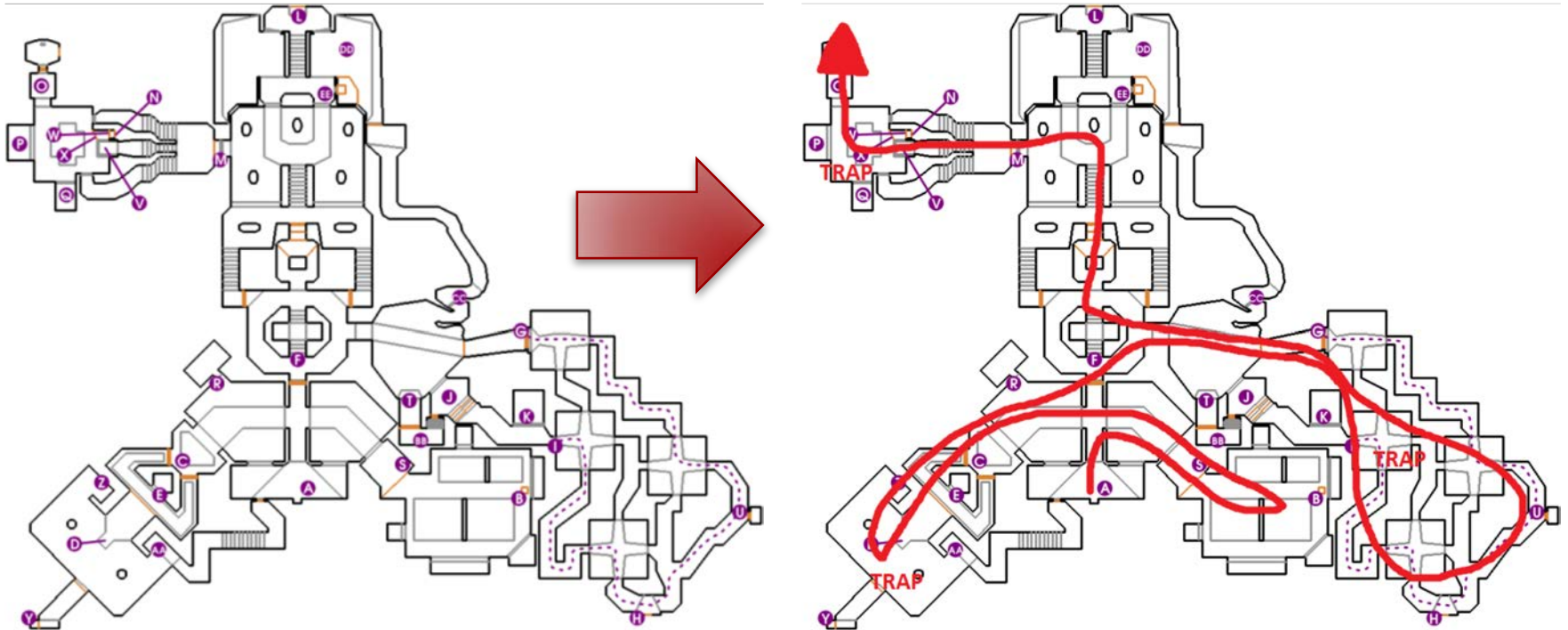
[refugeinaudacity.wordpress.com]

Level Design

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Learning How to Play

- Mechanics are (often) new and unfamiliar
  - Players have to learn how to interact with them
  - **Aside**: why innovation is not always popular

- Players could learn by reading the *manual*
  - This is boring! Let me play already

- **Tutorial levels** allow the player to…
  - Get started playing immediately
  - Learn the mechanics while playing

Level Design

Classic Approach: Restrict the Player

- Start with your **gameplay specification**
  - Remove all but the barest mechanics
  - Remove verbs by disabling controls
  - Remove interactions by omitting "board elements"

- Levels add new mechanics back one at a time
  - **Example**: Platformer with a "no-jump" level

- Do not need to add a new mechanic each level
  - "Deep" mechanics allow many levels per mechanic
  - This can influence game geography (e.g. worlds)

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Example: Starcraft Campaign

Level Design

Explicit Restrictions

- Mechanics are unavailable for current level
  - Controls for actions are explicitly disabled
  - Interactions disabled, even if elements present

- **Motivation**: Prevents player confusion
  - Do not waste time on useless mechanics
  - Key in the casual and young audience

- **Examples**: Many AAA comercial games
  - *Starcraft* single-player campaign
  - *Portal* (integrated into story)

Level Design

Implicit Restrictions

- Mechanics are always available, but not needed
  - Challenges designed for an explicit mechanic
  - Other mechanics may succeed, but they are harder
  - Level has hints to guide player to right mechanic

- **Motivation**: Allow replay in tutorial levels
  - Players go back and try optional approaches
  - Achievements are structured to encourage this

- **Example**: Many amateur Flash games
  - *My First Quantum Translocator*

Level Design

The Tyranny of Choice

- Too much choice can make us unhappy

  - We are often paralyzed by what to do

  - Studied by Myers & Lane; popularized by Barry Schwartz

- But games are about **meaningful choice**

  - Problem is when choices are too similar

  - Good choices must be *significantly* different

  - **Example**: Dagger adds +1 bonus to a stat of 102

- Players use rough heuristics for making choices

  - Pattern match current situation to determine action

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Portal 2 Mechanics

Level Design

Reinforcement

How long to "dwell" on mechanic before a new one?

Actions:
A = **jump**   **B** = **dash**

A B   **vs.**   **A A A B**

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Recombination

How often to combine with other mechanics

Actions:
A = jump   **B** = dash   **C** = shoot fireball

A B C   **vs.**   **A AB ABC**

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Reinforcement vs. Recombination

Robot Unicorn Attack

Level Design
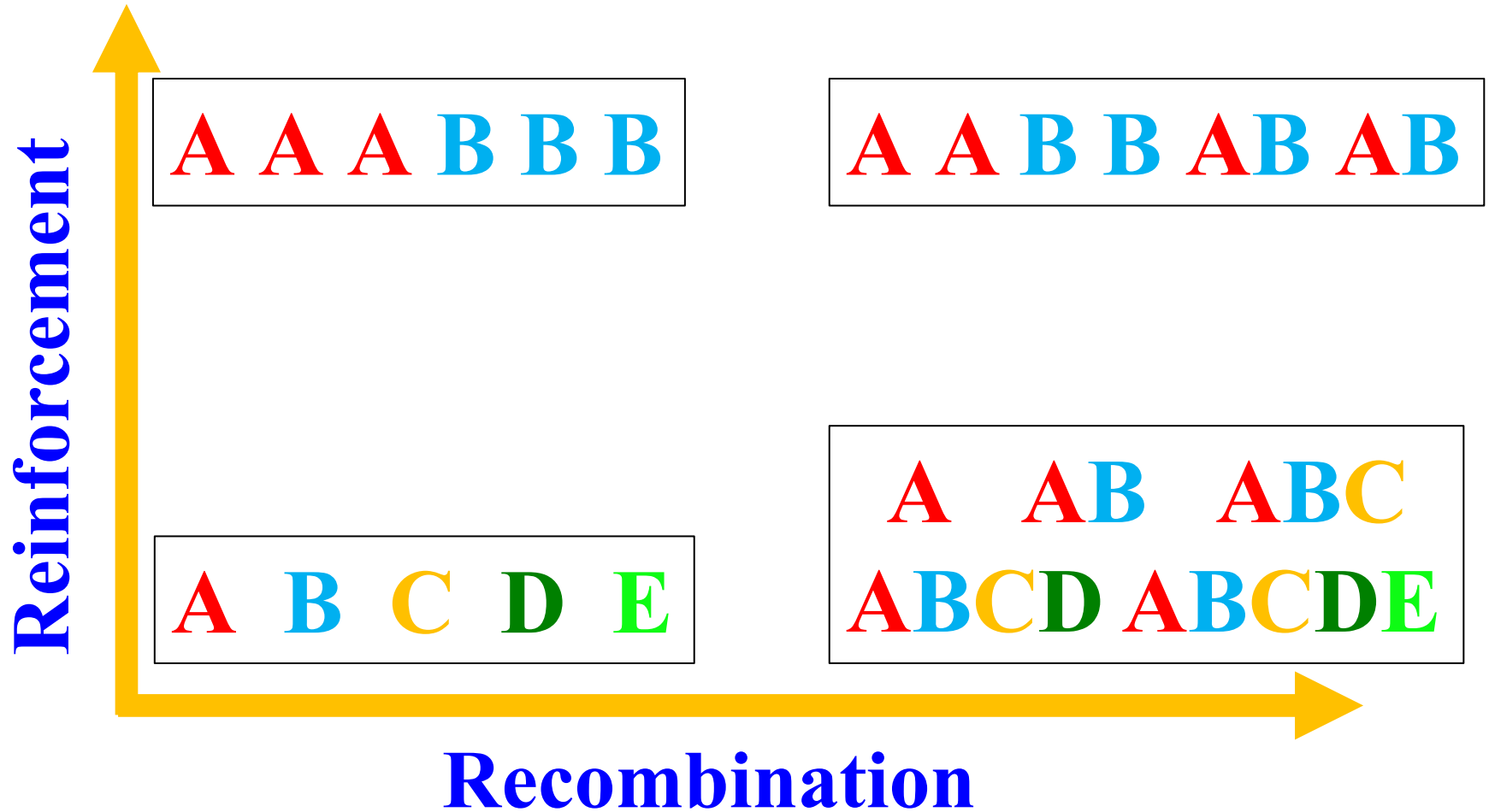
Robot Unicorn Attack Progression

<u>Mechanics:</u>

A = jump   **B = dash**

A **A** **A** **B** **A** **A** **B**

High reinforcement, low recombination
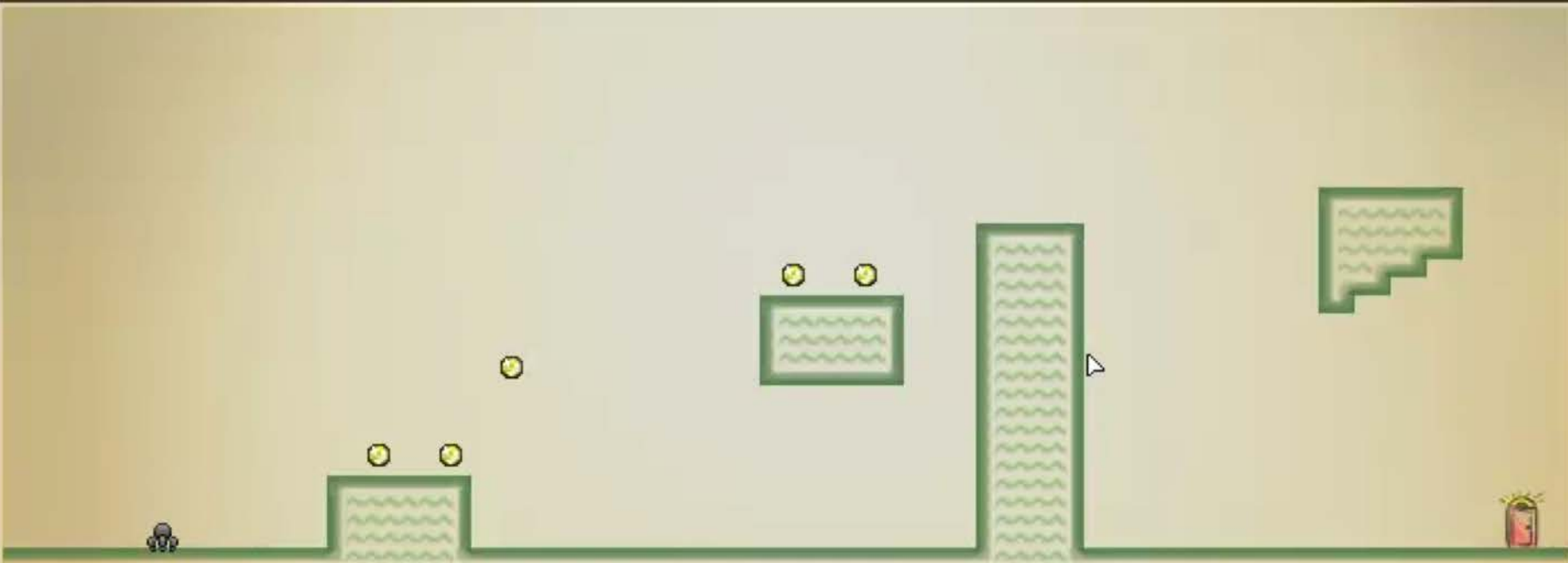
Hello Worlds!

A

COMBO(C) REWIND(V)

QUIT RESTART(R)

TIME: 7
PAR TIME: 45
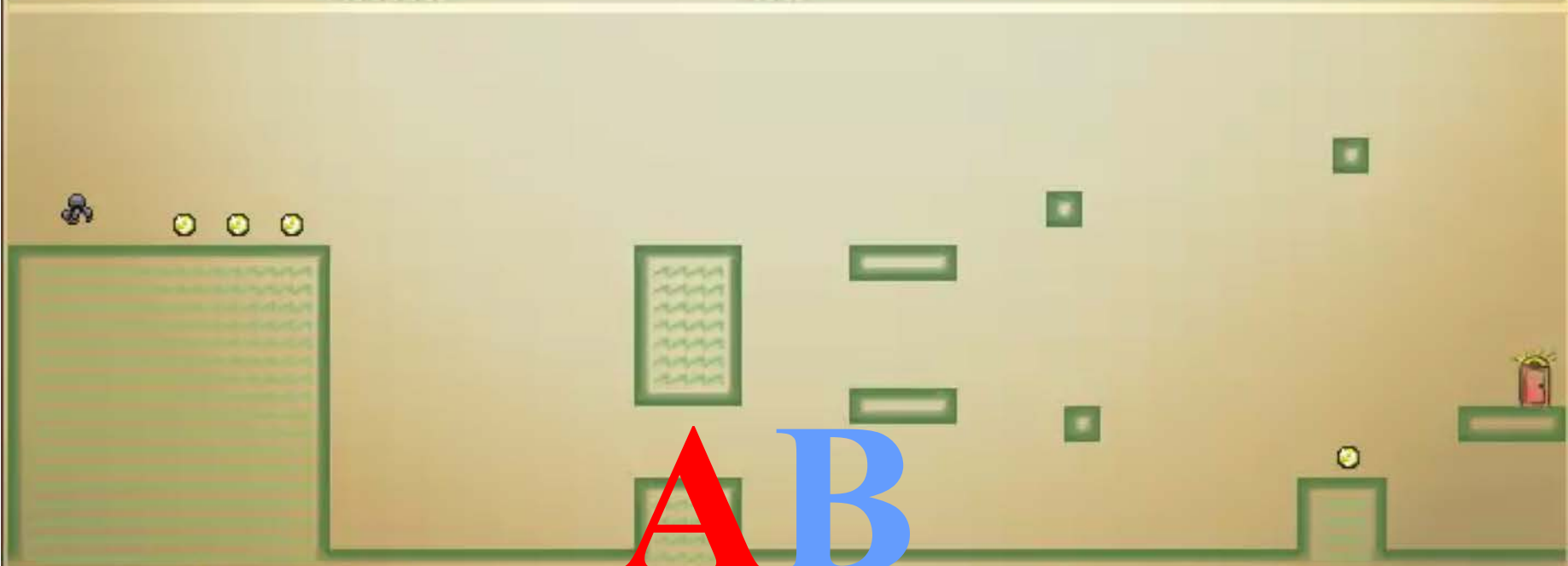SPEED TIME: 12

ALPHA

COINS ◯: 1/6
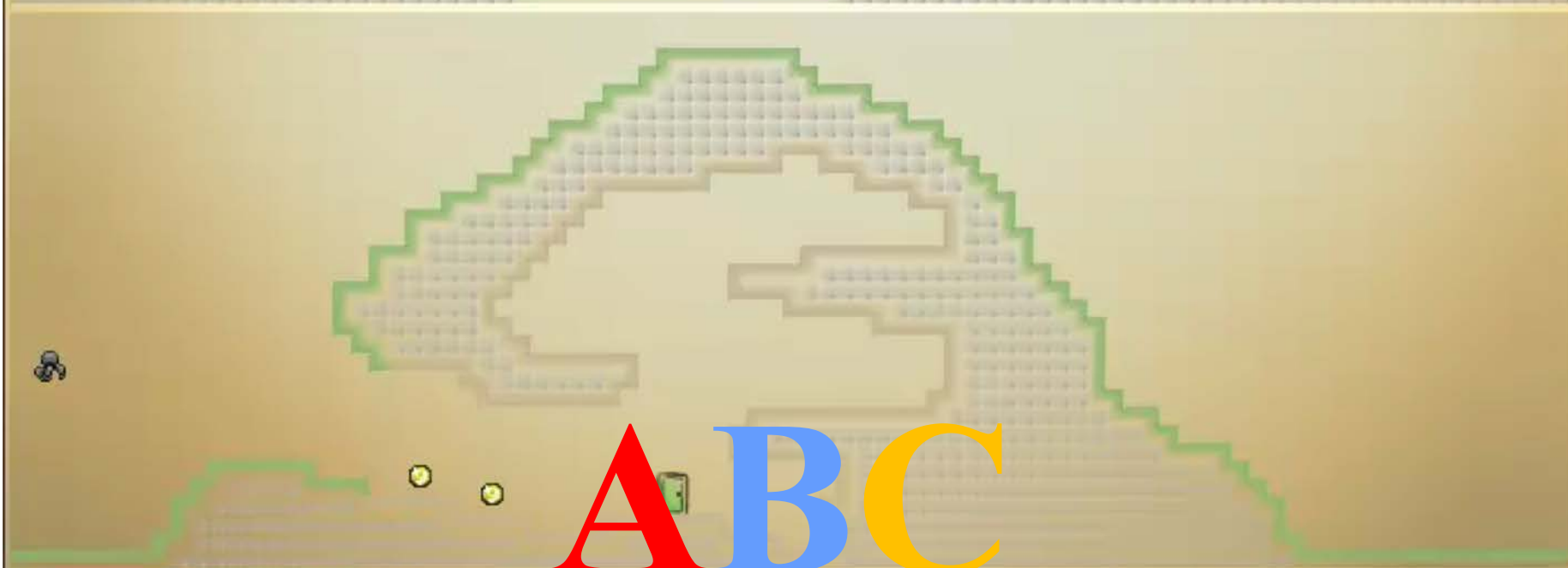STARS ☆: 0
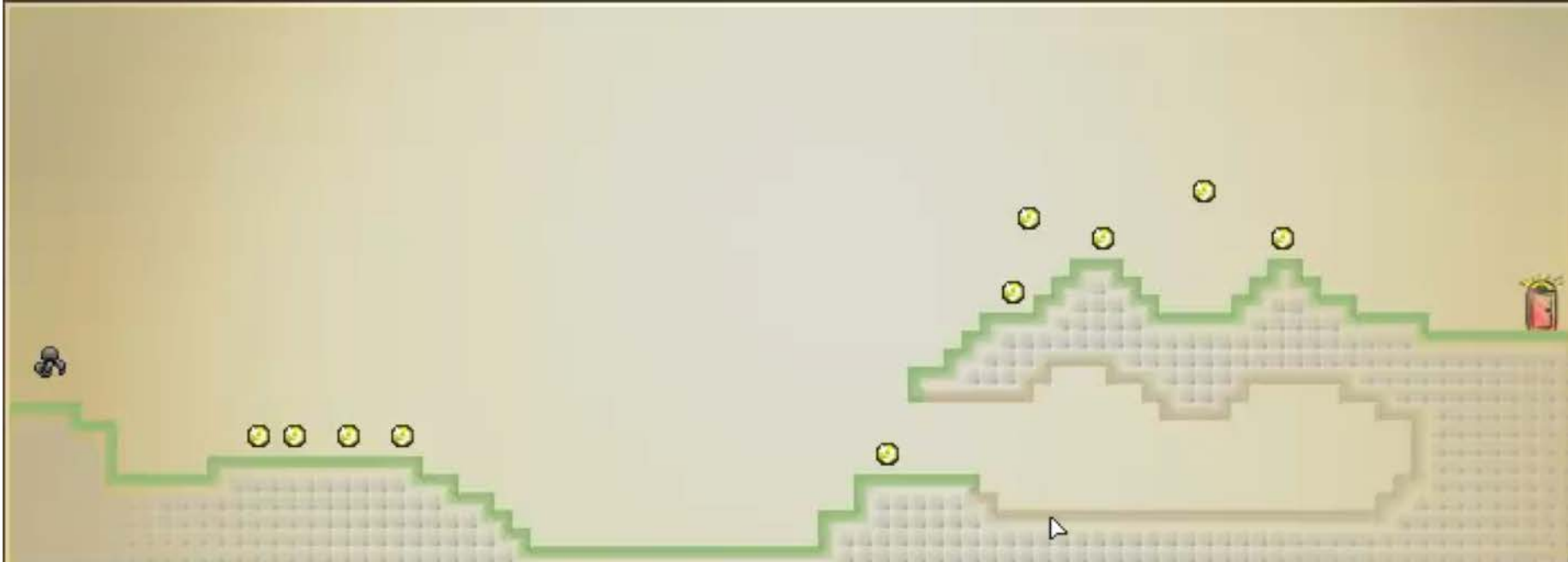POINTS: 0
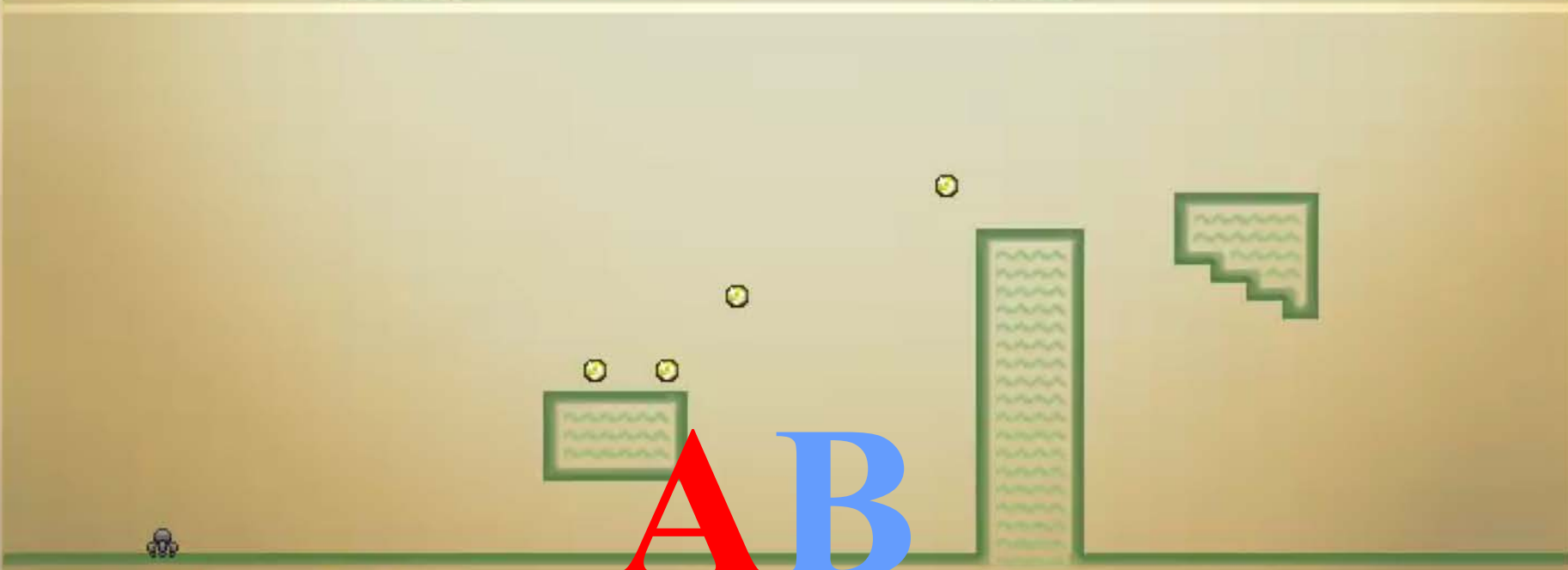
A **B**

COMBO(C)   REWIND(V)

QUIT   RESTART(R)

TIME: 0
PAR TIME: 60
SPEED TIME: 15
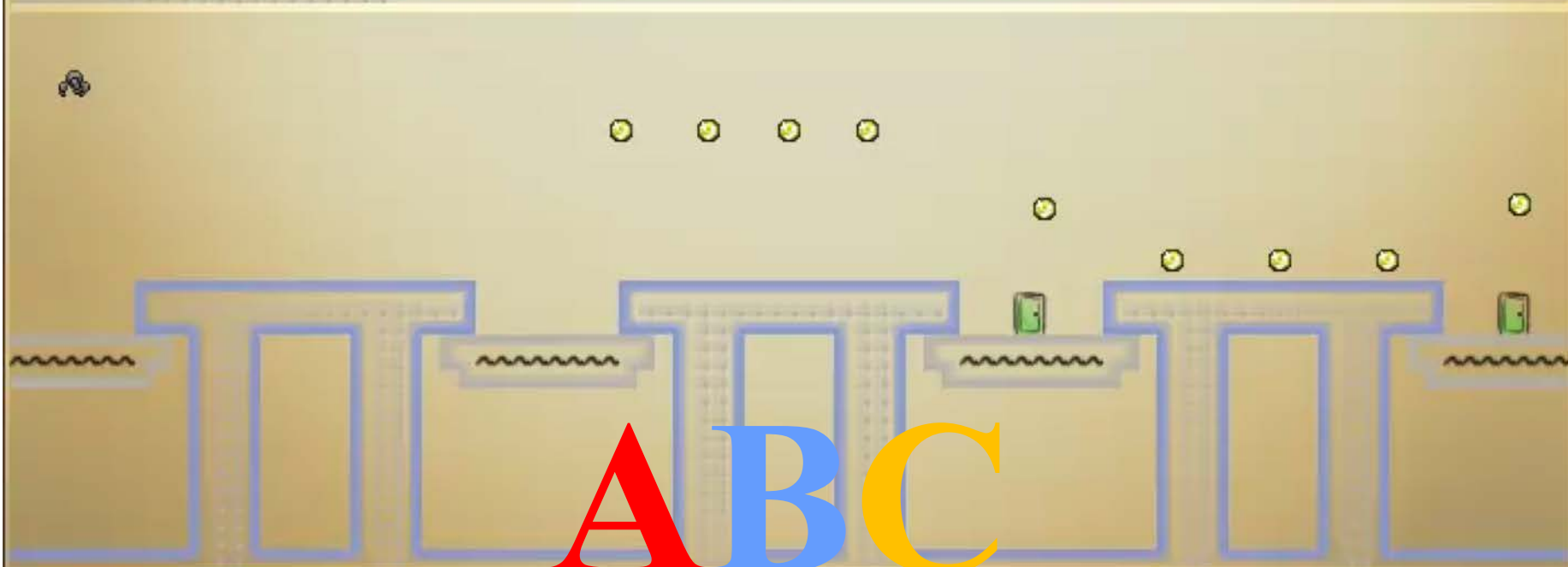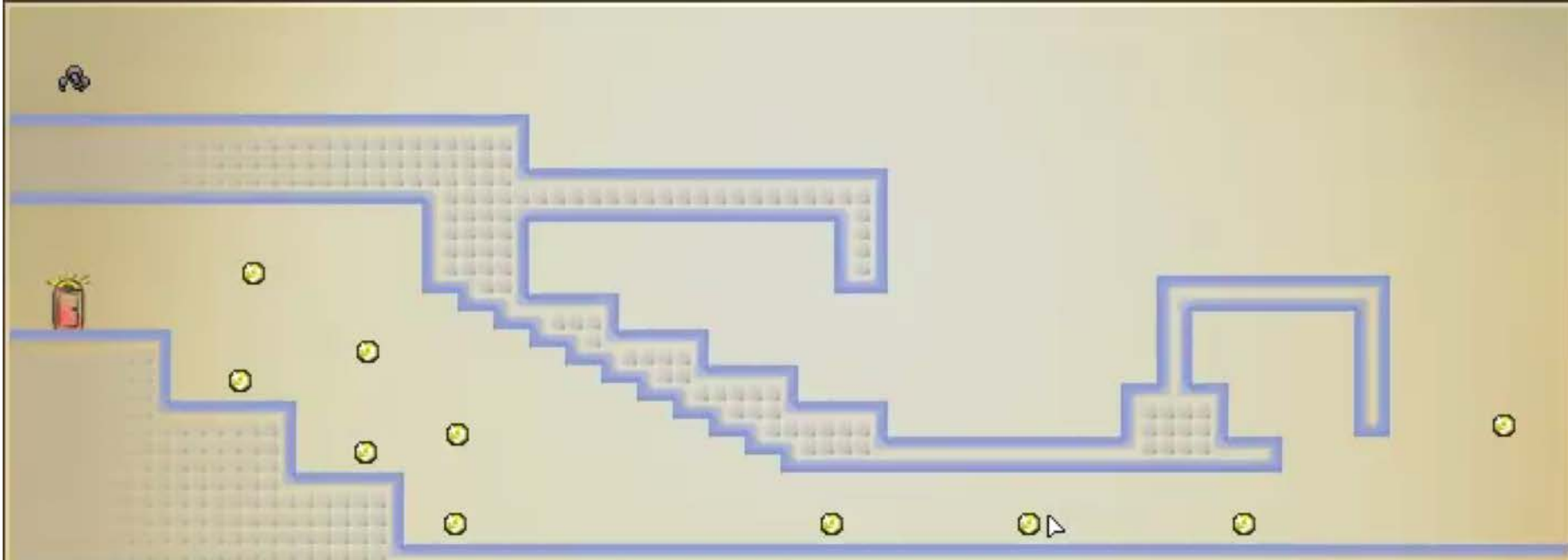
GAMMA

COINS ⊙: 0/6
STARS ☆: 6
POINTS: 573

ABC

COMBO(C)   REWIND(V)

QUIT   RESTART(R)

TIME: 0
PAR TIME: 60
SPEED TIME: 26

MOUNTAINSIDE

COINS ◎: 0/12
STARS ☆: 9
POINTS: 879

COMBO(C) REWIND(V) 🔊 TIME: 0
QUIT RESTART(R) ▶▶ PAR TIME: 60
SPEED TIME: 30

PILLARS

COINS ⊙: 0/19
STARS ☆: 12
POINTS: 1203

<u>Mechanics:</u>

A = move   **B = two worlds**   **C = close world**

A   AB   AB   ABC   ABC

Moderate reinforcement, high recombination

Starcraft

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Starcraft

A   AB   ABC   ABCD

Low reinforcement, high recombination

A   B   C   D

A   A   A   A

Level Design

Next Time…

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