

System Analysis and design: Lecture 1 : An Introduction

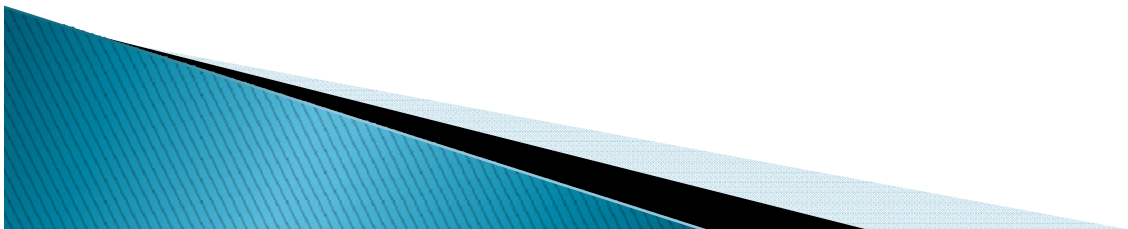
Dr. Nahla Barakat

Based on notes from Mark Overmars ,
Pearson education slides &
the
gamedesigninitiative
at Cornell university

Module Aims:

- It is a purely ***project based module***, where you will execute all activities associated with the development of a 2D game.

A detailed module specifications is posted on the e-learning page



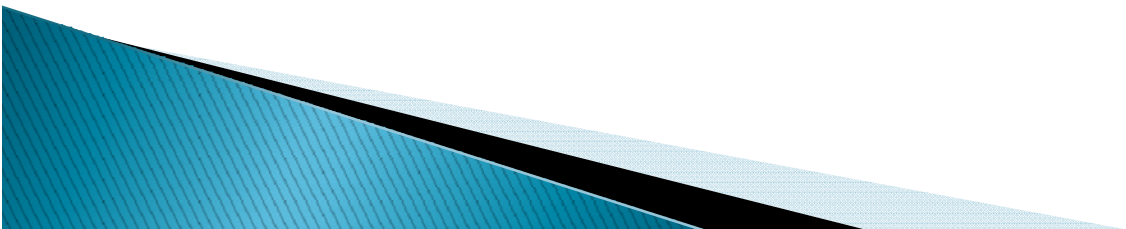
Methods of Learning, Teaching and Assessment

Total student effort for the module: 100 hours on average.

1. 12, 1h lectures/ workshops;
2. 12, 3h labs,
3. This in addition to self study hours

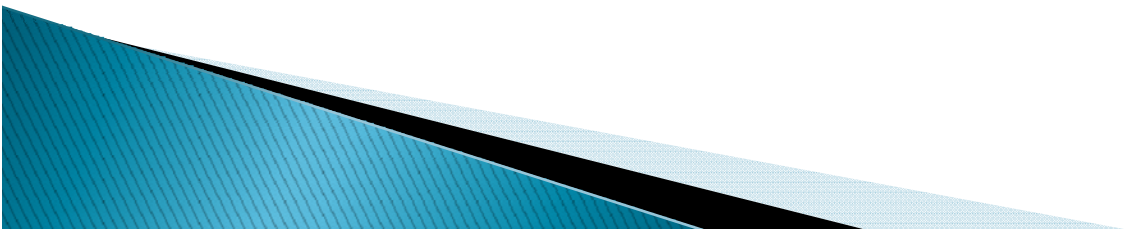
Assessment

1. Group project (3-4 students) to develop a 2D game using Unity. This project carries **70%** of the total mark.
2. In class assignment during **week 8**, which carries **30%** of the total mark.



What are you going to use?

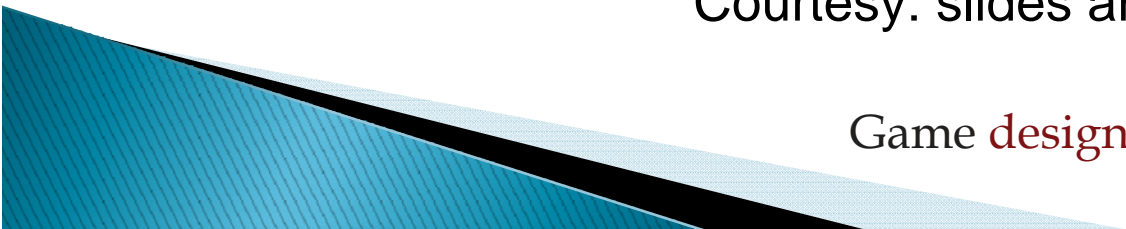
- Unity IDE
- Programming (in C#).



Nature of Games

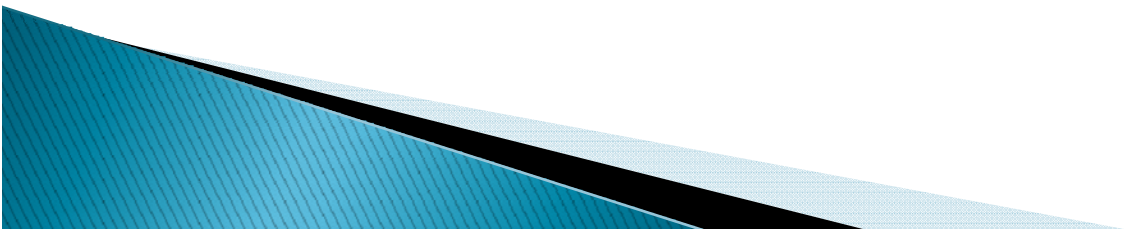
Courtesy: slides are adapted from:

Game **design** initiative at Cornell university



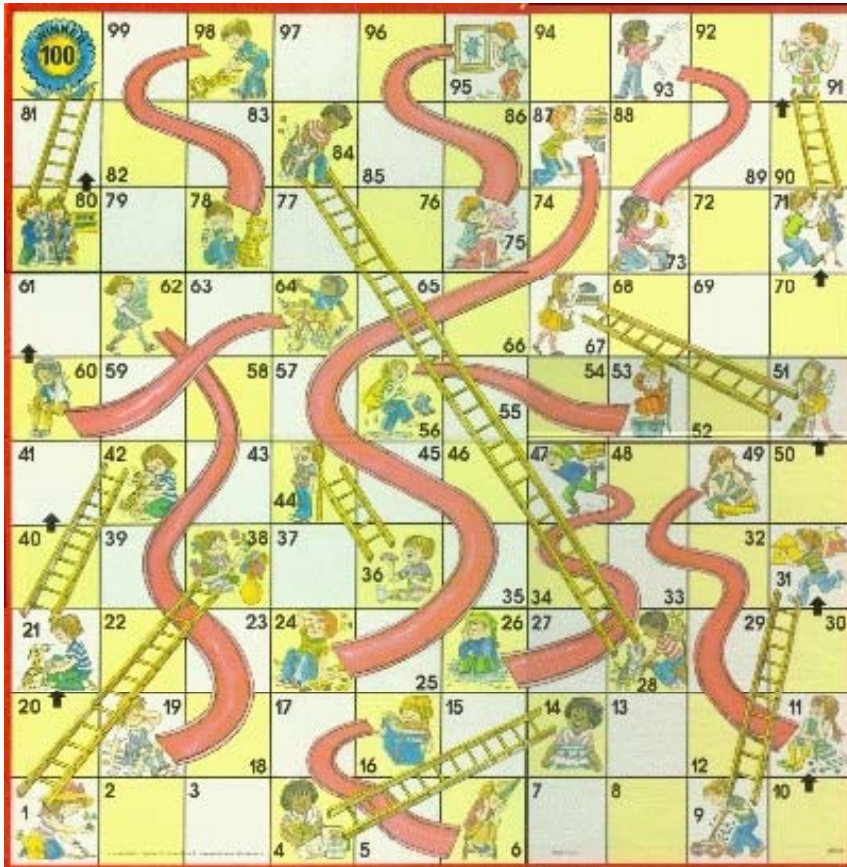
What Is a Game?

- ▶ Games have rules and goals
- ▶ Toys do not have rules or goals
- ▶ Puzzles have goals



What is a Game?

Rules



- ✂ Players take turns
- ✂ Spin the number wheel
- ✂ Move that many spaces
- ✂ When land on space...
 - ✂ Ladders take you up
 - ✂ Chutes take you down
- ✂ First one to 100 wins!

What is a Game?



Definitions of Games

✂ Adams: *Fundamentals of Game Design*

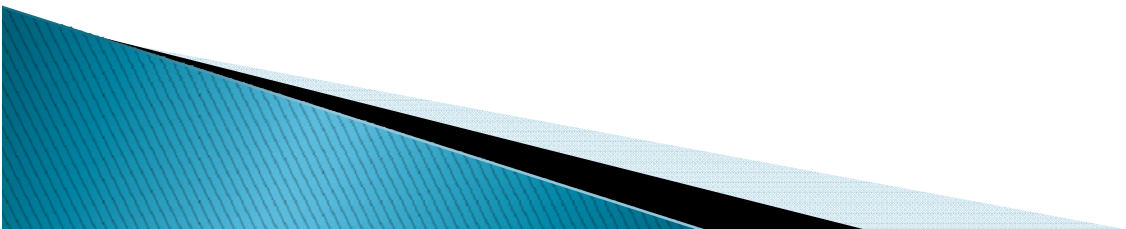
A **game** is a form of *interactive entertainment* where *players* must overcome *challenges*, by taking actions that are governed by *rules*, in order to meet a *victory condition*.

✂ Salen& Zimmerman: *Rules of Play*

A **game** is a *system* in which *players* engage in *artificial conflict*, defined by *rules*, that results in a *quantifiable outcome*.

Design Decisions

- Players
- Challenges
- Rules
- Goals



Design Decisions

✂ Players

- ✂ How many players are there at a time?
- ✂ Who or what is the player in the world?
- ✂ Specifies a notion of *identity*

✂ Goals

- ✂ What is the player trying to achieve?
- ✂ Specifies the player *focus*

Design Decisions

⌘ Rules

- ⌘ How does the player affect the world?
- ⌘ How does the player learn the rules?
- ⌘ Specifies the *boundaries* of the game

⌘ Challenges

- ⌘ What obstacles must the player overcome?
- ⌘ Is there more than one way to overcome them?
- ⌘ Specifies the fundamental *gameplay*

(Other) Design Decisions

✂ Game Modes

- ✂ How are the challenges put together?
- ✂ What is the interaction *context*?

✂ Setting

- ✂ What is the nature of the *game world*?

✂ Story

- ✂ What *narrative* will the player experience?
- ✂ How is it connected to gameplay?

What about Fun?

✂ But how do we create **good** games?

✂ Games are a creative medium

✂ Games are designed to entertain

✂ **Question:** What makes a game *fun*?

✂ **Better:** Why do people play games?

Casual vs. Core

- ✂ **Core gamers** play lots of games
 - ✂ Almost always to finish games they play
 - ✂ Want hard games; will tolerate frustration
- ✂ **Casual gamers** play for enjoyment
 - ✂ Will stop when the game stops being fun
 - ✂ Challenges must be reasonable
- ✂ Harder to distinguish than you think
 - ✂ Something designers are paying less attention to

Play Length

⌘ How short a game can I play and have fun?

⌘ Least meaningful unit of play

⌘ **Console**: 30 minutes+ is acceptable

⌘ **Mobile**: No more than a minute

⌘ **Casual** often means short play units

⌘ But can have sophisticated gameplay!

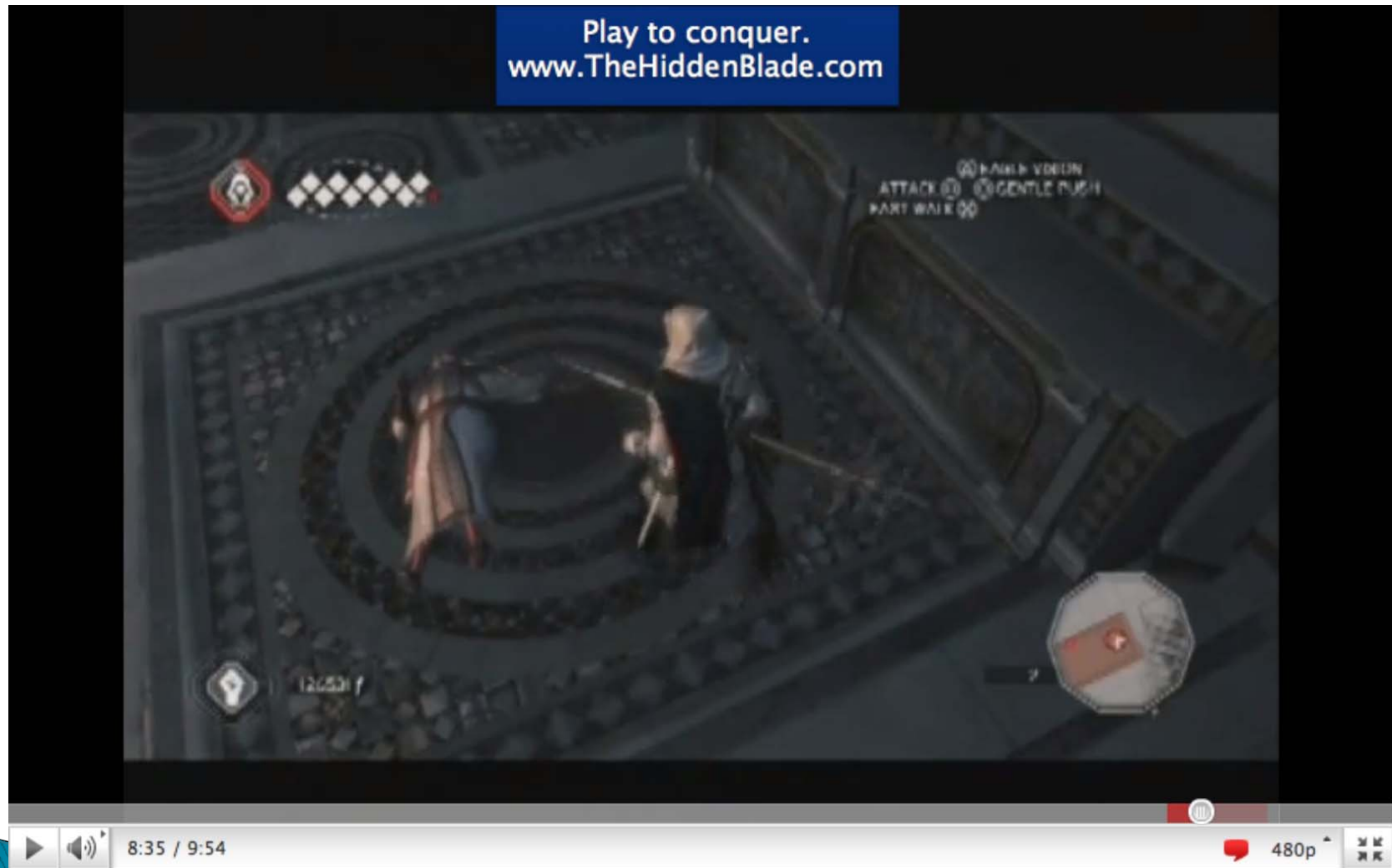
⌘ **Example**: *Plants vs. Zombies*

⌘ But long play length is always **core**

Psychology: Bartle's Four Types

- ⌘ Theory of players in online games:
 - ⌘ **Achiever**: Overcome challenges, gather rewards
 - ⌘ **Explorer**: Discover, understand game world
 - ⌘ **Socializer**: Interact & role-play with others
 - ⌘ **Griefer**: Distress other players in the game
- ⌘ Games often designed for multiple groups
 - ⌘ **Example**: *World of Warcraft*
- ⌘ But just one *model* of player psychology

The Explorer



Dueling Design Philosophies

Narrative

- ✂ Games are a *story medium*
 - ✂ Focuses on storytelling
 - ✂ Traditional narrative structure
- ✂ **Advantages:**
 - ✂ Emotionally compelling
 - ✂ Strong artistic vision
- ✂ **Disadvantages:**
 - ✂ Author *voice* over player voice
 - ✂ Poorly defined mechanics

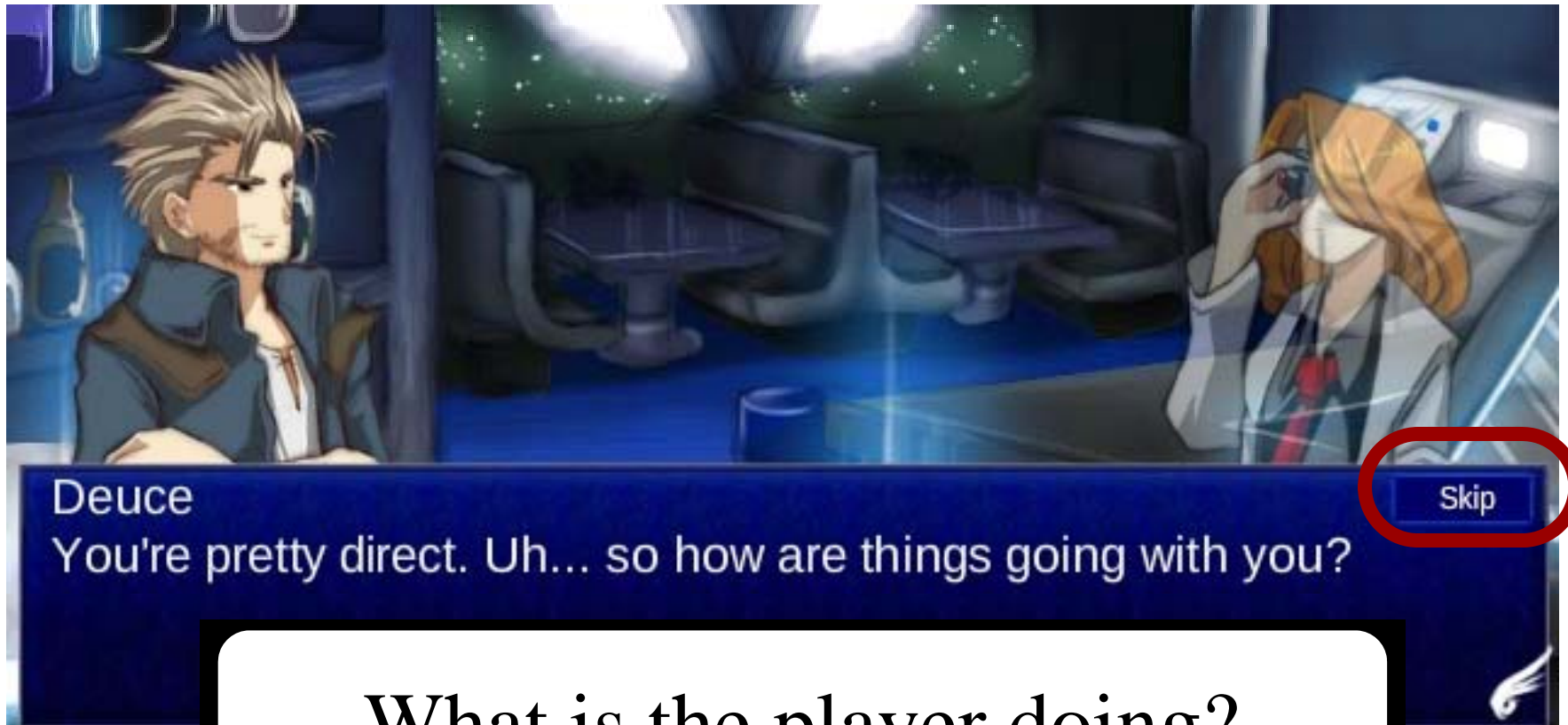
Ludic

- ✂ Games are about *mechanics*
 - ✂ Focus on gameplay, rules
 - ✂ Storytelling is minimal
- ✂ **Advantages:**
 - ✂ Focus on player *activity*
 - ✂ Tight, well-defined gameplay
- ✂ **Disadvantages:**
 - ✂ Lack of player motivation
 - ✂ Hard to distinguish yourself

The Dangers of Pure Story

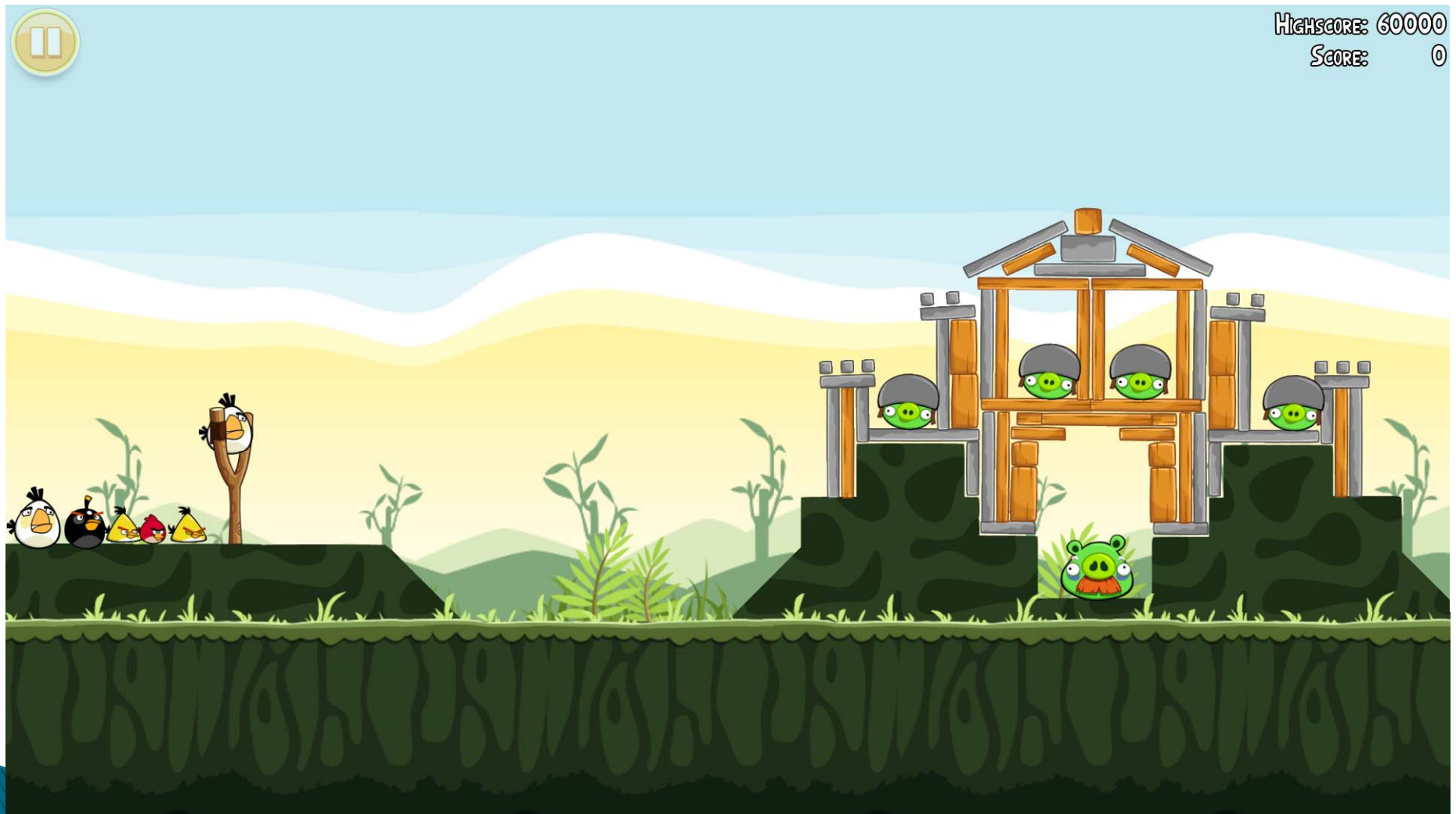


The Dangers of Pure Story

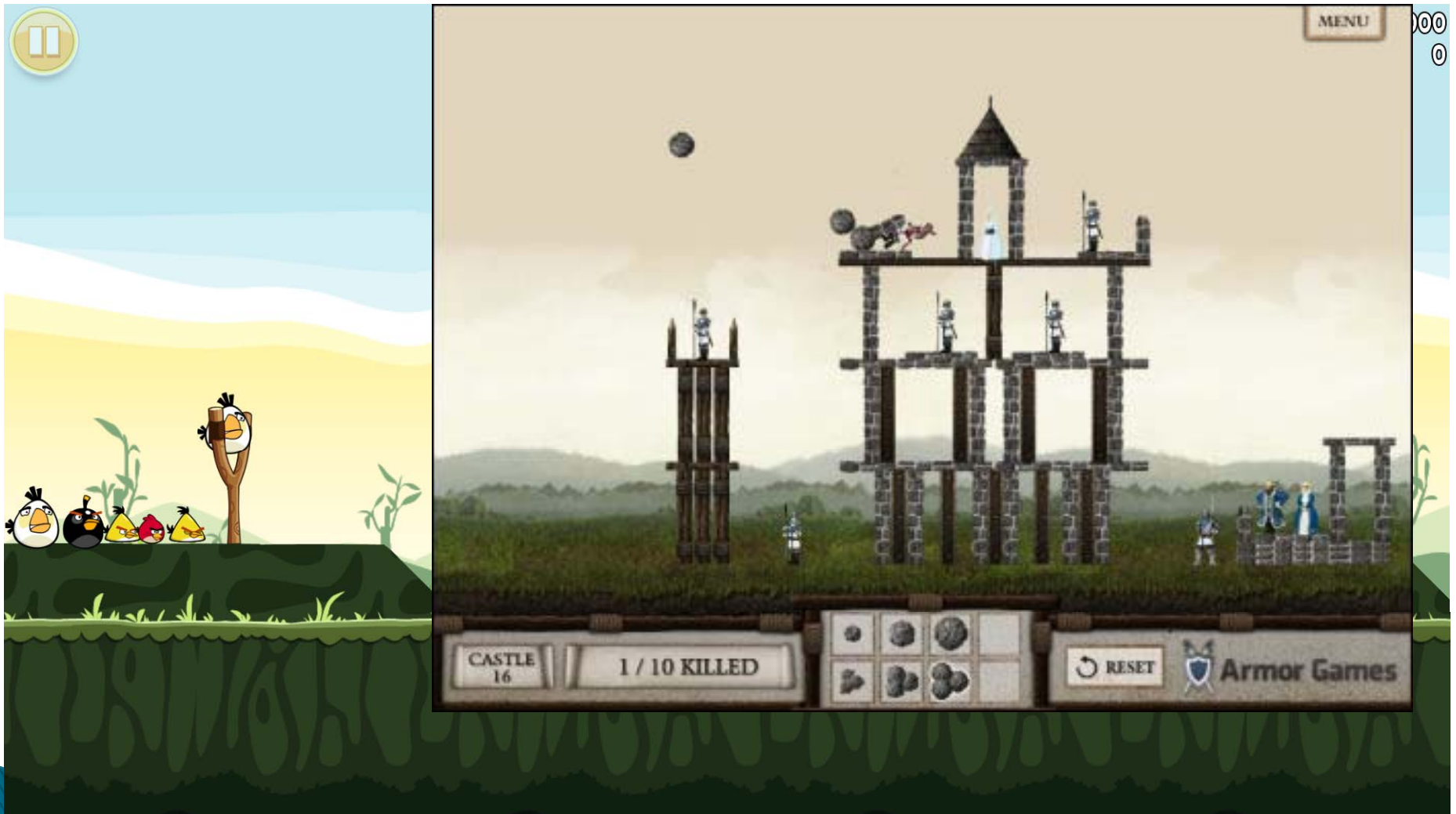


What is the player doing?

But Ludic is Not Everything



But Ludic is Not Everything



Game Design Must Be a Balance

Motivate the Player

- ⌘ Needs a story *framework*
 - ⌘ Setting to work within
 - ⌘ Strong sense of identity
 - ⌘ Challenges with context

Empower the Player

- ⌘ Drama from player *actions*
 - ⌘ Define what the player can do
 - ⌘ Challenges reward or punish
 - ⌘ Freedom in achieving goals

The Adams Approach

✂ Games as *wish-fulfillment*

✂ I want to _____

✂ Questions to answer:

✂ What dream are you satisfying?

✂ What *goals* does this dream create?

✂ What *actions* achieve those goals?

✂ What *setting* does this dream create?

✂ What is the appropriate *interface*?

✂ Use this to define **gameplay**

The Adams Approach

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Narrative

Ludic

26 ✂ Use this to define **gameplay**

Exploring Gameplay

- ✂ To design games, you must play games!
 - ✂ Experience many different types of gameplay
 - ✂ Do not play the same type of game all the time
- ✂ Flash portals are still a good resource
 - ✂ Games are small but focus entirely on gameplay
 - ✂ Kongregate & Armor Games are some of the best
 - ✂ Puzzle game? Look at Kongregate first

Commercial Examples

- ⌘ **Braid**: Puzzle platformer with time-travel mechanics
- ⌘ **Limbo**: Dark platformer with realistic physics
- ⌘ **Hotline Miami**: Top-down action
- ⌘ **Clash of Heroes**: Match 3 + Turn-based strategy
- ⌘ **Monument Valley**: Puzzle-based exploration

Summary

- ✂ Games are not necessarily well-defined
 - ✂ They have **players**, **goals**, **rules**, and **challenges**
 - ✂ Not much agreement on anything else
- ✂ Game design is about finding balance
 - ✂ Want **narrative** to motivate players
 - ✂ But need **ludic** elements to give agency
- ✂ Will start with the Adams approach:
 - ✂ Create a setting or narrative framework
 - ✂ Use that to guide the ludic elements

Questions?

