



the
gamedesigninitiative
at cornell university

Design Elements

Reminder: Aspects of a Game

- **Players:** How do humans affect the game?
- **Goals:** What is the player trying to do?
- **Rules:** How can the player achieve the goal?
- **Challenges:** What obstacles block the goal?

Formal Design Elements

- **Players:** Player Mode Sketches
- **Goals:** Objectives
- **Rules:** Actions and Interactions
- **Challenges:** Obstacles and Opponents

Player Mode Sketches

- Game may have several *player modes*
 - Ways in which player interacts with a game
 - **Example:** Inventory screen vs. combat screen
- You should *storyboard* all of your modes
 - Sketches of each of the major player modes
 - May have action (like movie storyboard)
 - Illustrate how player interacts with game

Dragon Age: Standard Mode



Dragon Age: Inventory Mode

Inventory ▶ **Armor**
All

Reinforced Scout Mail 133 ⚔

Reinforced Scout Mail 134 ⚔

14con 9Rdef 156 ⚔

Orlesian Army Battlemage Armor 14con 9Rdef

110 Armor Rating
ITEM LEVEL 13
COMMON LIGHT ARMOR
+15 CUNNING
RESTRICTION: MAGE ONLY
RESTRICTION: HUMAN-TRAINED ONLY
REQUIREMENT: LEVEL 10

156 Armor Rating
ITEM LEVEL 13
CRAFTED LIGHT ARMOR
+14 CONSTITUTION
+9% RANGED DEFENSE
RESTRICTION: MAGE ONLY

Dorian
LEVEL 15 MAGE

CORE STATS

Health	██████████
Stamina	██████████
Mana	██████████

DEFENSES

Physical	██████████
Fire	██████████
Ice	██████████
Lightning	██████████
Dark	██████████

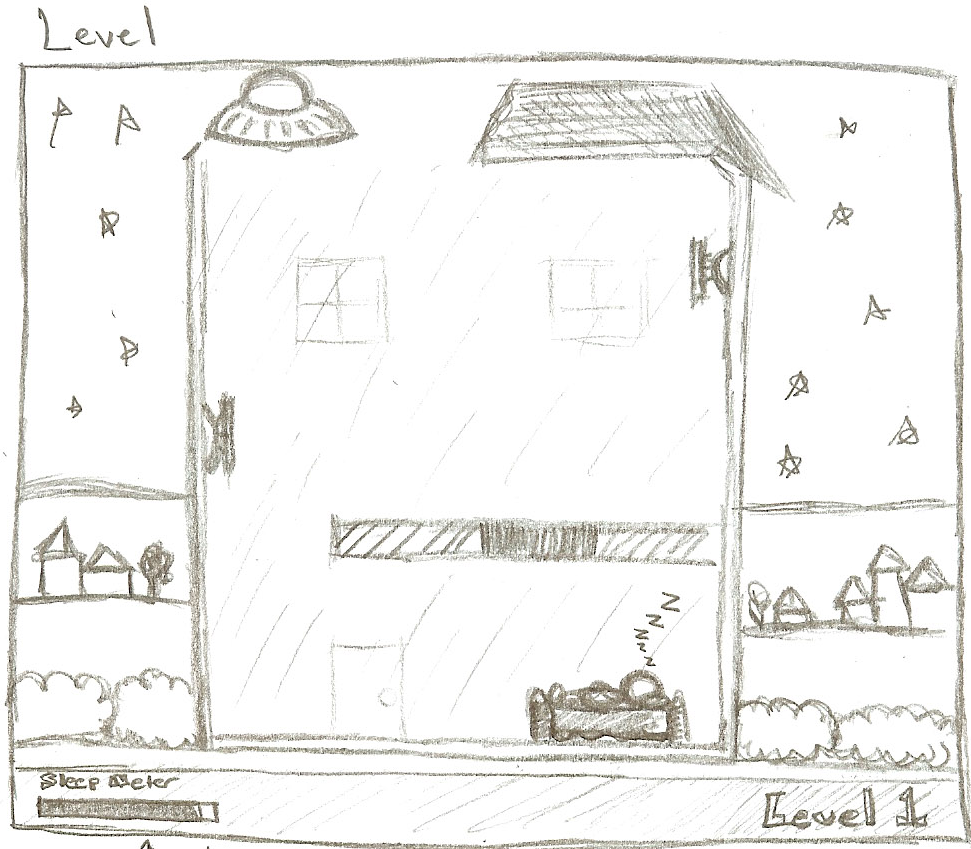
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BACK EQUIP DESTROY **MOVE TO VALUABLES**

Aside: *Help the Hero*



Lifted: Player Mode Sketch



↑ stars
scroll up

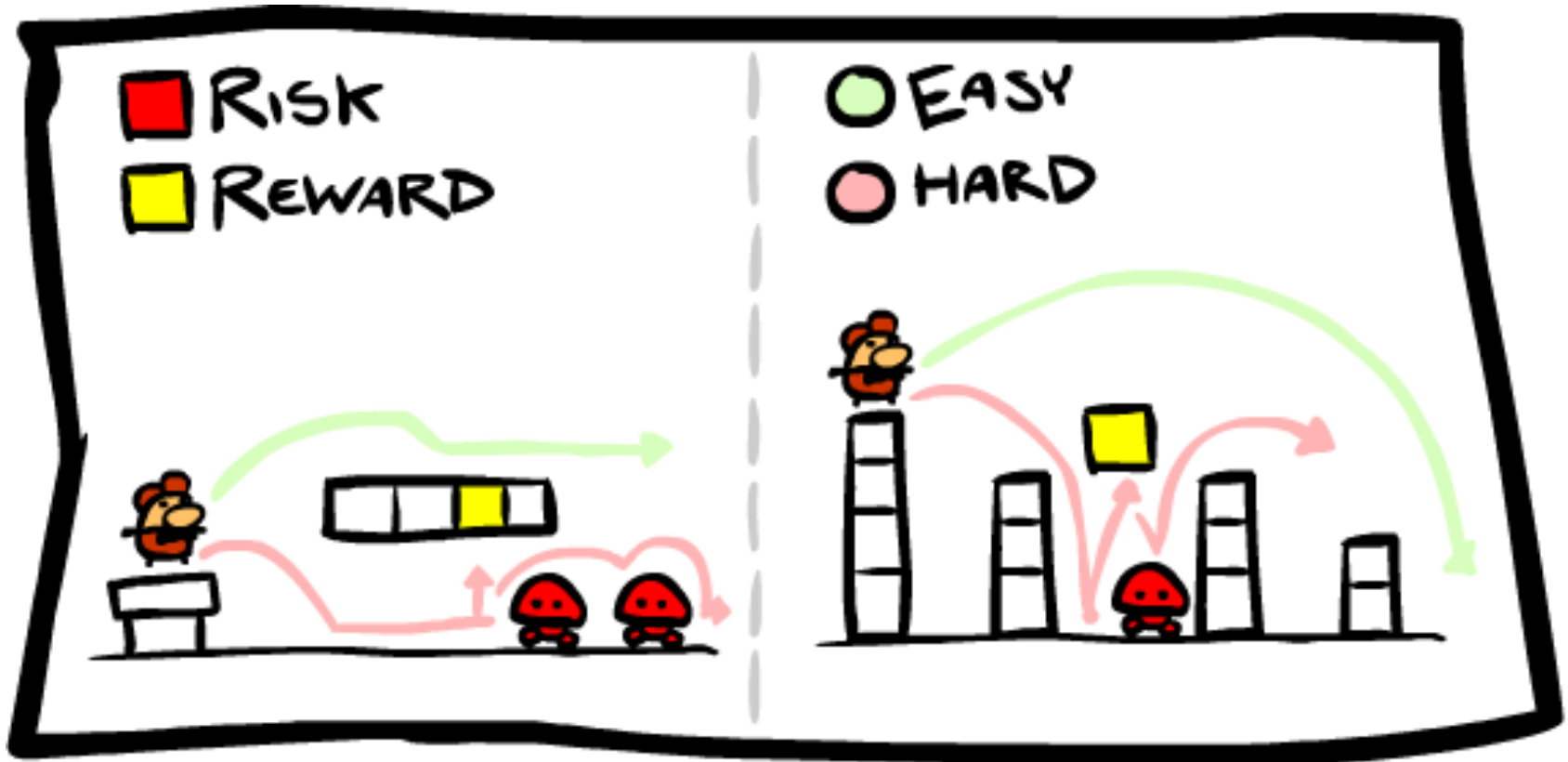
Where is
the action?

↑ also reflected by Zs above head

Lifted: Completed Game



Diagramming Action



Objectives

- Anything a player might strive for
- May be a **primary** game objective
 - Progressing the story
 - “Completing” the game
- May be an **auxiliary** game objective
 - Side missions/quests
 - Unusual achievements
- Sometimes **player-directed**
 - Reward structure in sandbox games

Objectives

- **Primary** objectives reflect vision
 - Wish fulfillment: I want to _____
 - Help player realize the dream
- **Auxiliary** objectives address player style
 - Achievements for **achievers**
 - Easter eggs for **explorers**
 - Online resources for **socializers**
- **Player-driven** objectives require a different focus
 - Start with a **toy**, and layer dramatic elements on it

Some Objective Categories

- **Capture:** take or destroy something of value
 - Includes “kill all enemies of type X”
- **Race:** reach a goal within time
- **Chase:** catch or elude an opponent
 - Race with a dynamic goal/destination
- **Rescue/Escape:** Get someone to safety
- **Exploration:** Locate something in game world

Some Objective Categories

- **Capture:** take or destroy something of value
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- **Race:** reach a goal within time
- **See the text for more ideas**
- **Reach:** reach a goal/destination
- **Rescue/Escape:** Get someone to safety
- **Exploration:** Locate something in game world

Actions

- **Verbs** that describe what the player can **do**
 - Walk
 - Run
 - Jump
 - Shoot
- Does not need to be attached to an avatar
 - Build
 - Swap
 - Rotate


Actions

- **Verbs** that describe what the player can **do**
 - Walk (left or right)
 - Run (walk, but faster!)
 - Jump (up; jump/run for left or right)
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- Action
Platformer

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Action
Platformer
- Does not need to be attached to an avatar
 - Build (RTS or simulation)
 - Swap (Bejeweled clones)
 - Rotate (Stacking games)

Designing Actions

- Starts with brainstorming the verbs
 - Define the types of verbs
 - Define the scope of the verbs
- **Design Goals**
 - Enough verbs to avoid being too simple
 - But not so much to be confusing (verb bloat)
 - Do the verbs *directly* achieve the goal?
- Each verb maps to a single **input**

Primary Actions



- How do verbs, goals relate?
 - Imagine there no challenges
 - What verbs *must* you have?
- **Example:** Platformers
 - **Goal:** reach exit location
 - Only need movement verbs
 - Killing enemies is *optional*
 - Other actions are *secondary*
- **Focus on primary actions**

Secondary Actions are Optional



- Often in **puzzle platformers**
 - Platformer verbs + something
 - “Innovation on the cheap”
- Verb alters “geography”
 - Access hard-to-reach areas
 - Directly overcome *challenges*
 - Really just movement+
- But do this sparingly!
 - Too many creates **verb bloat**



The Game State

- Collection of values representing game world
 - Location, physical attributes of each game object
 - Non-spatial values (e.g. health) of these objects
 - Global non-spatial values (e.g. difficulty)
- Actions *modify* the game state
- Not necessary to specify this in early designs
 - Focus on coming up with your actions first
 - Only need enough state to understand **interactions**

Interactions

- Not a *direct* action of player
 - Result of the **game state**
 - Can happen w/o controller
- **Example:** collisions
 - May be bad (*take damage*)
 - May be good (*power-up*)
- **Other Examples:**
 - Spatial proximity
 - Line-of-sight
 - Resource acquisition



Game Mechanics

- **Game mechanic**
 - Relationship of **verbs**, **interactions**, and **state**
 - Often call this relationship the “rules”
 - **Gameplay** is manifestation of these rules
- **Example: Joust**
 - **Verbs**: Flap; go left or right
 - **Interaction**: Collision with opponent
 - **Rule**: If hit opponent, lower player dies

Gameplay Example: *Joust*

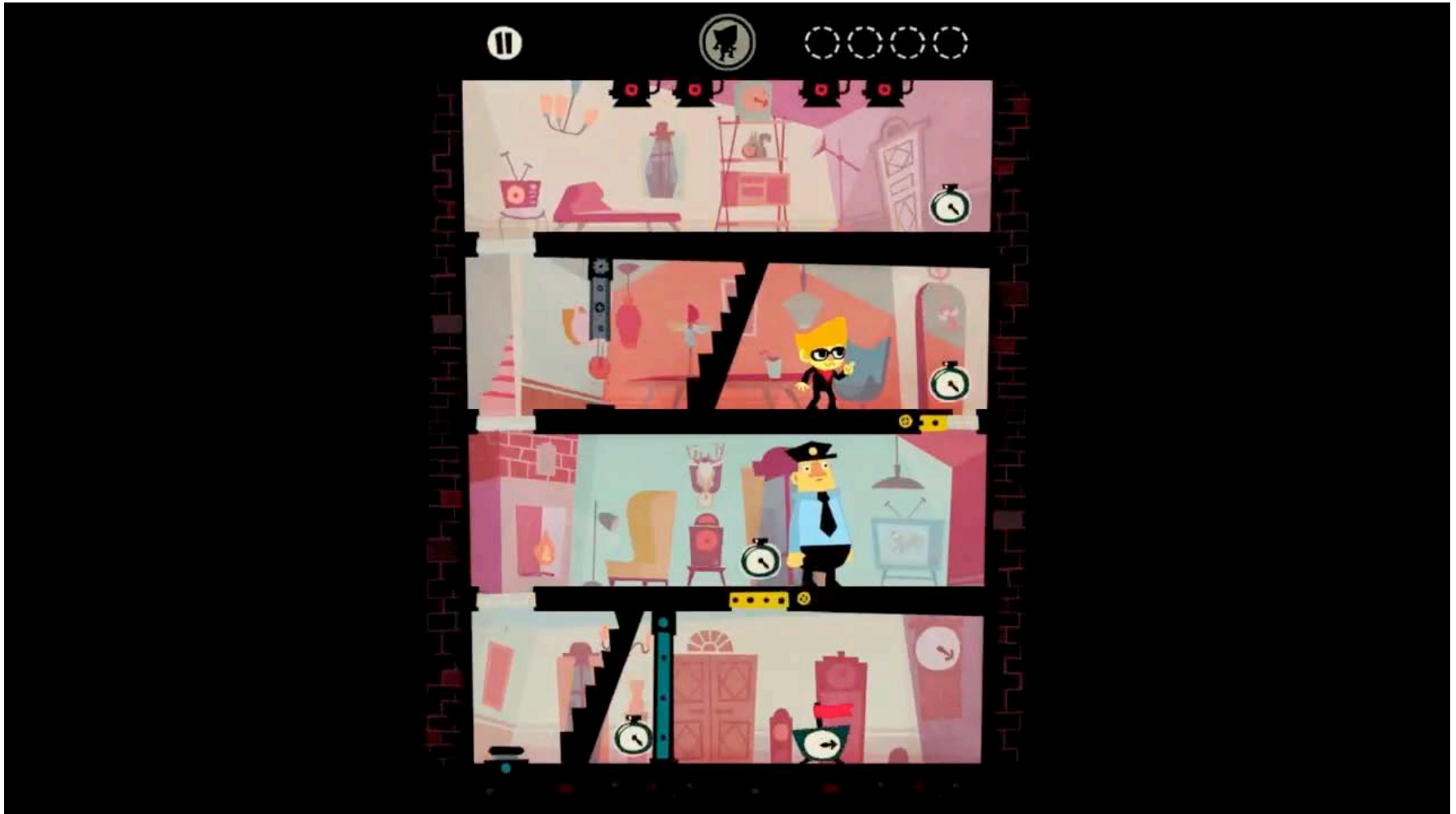


Verbs vs Interactions



- **Design Idea:** minimalism
 - Game with very few verbs
 - Mechanics are all interactions
 - Common in mobile, tablet
- **Example:** Sneak Beat Bandit
 - Has only one verb: *move*
 - Rhythm game; move to beat
 - All movement on rails
 - If obstacle in way, turn
 - Line-of-sight mechanics

Beat Sneak Bandit



Avoid Verb Proxies

- **Proxy**: verb that activates another verb
 - “Use an item” (what does the item do?)
 - “Shoot” (what does the weapon do?)
- Make the **outcome** of your verbs clear
 - Fire standard projectile (effects have “travel time”)
 - Fire continuous beam (effects are instantaneous)
- Important questions to ask
 - How does help reach the goal?
 - How is it outcome challenged?



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Behavior is defined (them do?)
by the *interaction* (weapon do?)
of projectile/beam



Challenges

- **Obstacles**

- Prevent progress towards goal
- Have to be “overcome”

- **Opponents**

- Players or bots with their own goals
- May or may not need to be overcome

- **Dilemmas**

- Can only perform one of several actions
- “Correct” choice not immediately clear

Challenges

- **Obstacles**

- Prevent progress towards goal
- Have to be “overcome”

- **Opponents**

- Players or...

See Text for Specific Examples

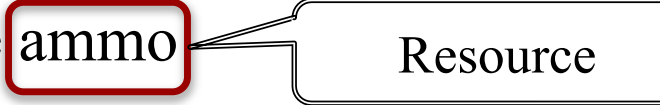
- **Decisions**

- Can only perform one of several actions
- “Correct” choice not immediately clear

Challenges: Limitations

- You **cannot** always perform an action
 - Shooting may require ammo
 - Cannot (always) jump in mid air
- **Limitation**: requirement to perform action
 - Boolean test (like an `if-then`)
 - Checked at time of user input
- Only **one** limitation per verb
 - If more than one, split into more verbs
 - Reason double-jump is distinct

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Challenges: Resources

- Resources are **non-spatial** part of game state
 - Any value not a location or physical attribute
 - May be global or attached to an entity
- Examples
 - **Entity:** ammunition, health points
 - **Global:** enemy spawns, time remaining
- Resources often implement **limitations**
- They also define the **game economy**

Challenges: Resources


- Resources are **non-spatial** part of game state
 - Any value not a location or physical attribute
 - May be global or attached to an entity
- Examples
 - Will cover in more detail later.
 - ... spawns, time remaining
- Resources often implement **limitations**
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Putting It All Together

- Start with your **vision**
 - I want to _____
 - This creates setting and player goals
- Create a (partial) list of the following:
 - **Objectives**
 - **Actions**
 - **Interactions**
 - **Challenges**

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Sketch **player modes** to show them in action