

Principles of Level Design

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Tech Valley Game Space

Agenda

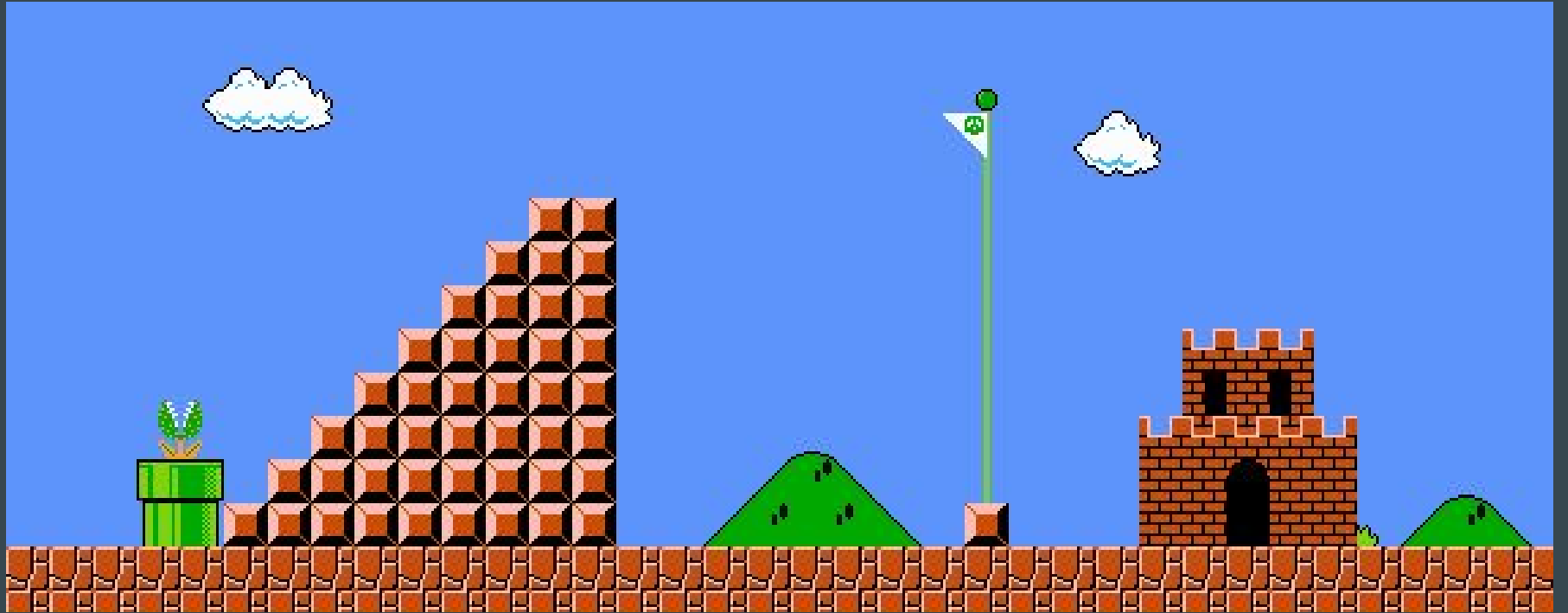
1. What is Level Design?
2. What are Levels?
3. Difference between Level Design and Environmental Art
4. Useful Skillsets
5. How to design levels
6. Techniques
7. Pacing
8. Tutorial
9. Other Tips
10. Super Mario Maker level analysis!

What is a Level Designer?

Easy: Someone who designs levels.

But what is a level?

Is this a level?



Is this a level?



Is this a level?



<https://www.usc.edu/admission/undergraduate/>

Is this a level?



Level: a definition

A carefully constructed space or missions created within a pre-made area designed to convey a series of events.

Example of a good level (Call of Duty 4: Modern Warfare)



(Starts at the 3:04 mark)

Difference between Level Design and Environmental Art

- Level Designers

- Sketches level blueprints
- Coordinate placement of enemies
- Mark where to trigger certain events
- Provide visual or auditory cues for guidance
- Use game mechanics to immerse the player

- Environmental Artists

- Design a consistent visual theme to the level
- Provide visual cues for guidance
- Use visual methods to immerse the player

Useful Skillsets

Level design is most similar to Space Planners, Movie Directing, and of course, Game Design

- Space Planners include: theme park designers, architects, interior designers, exterior designers, city planners, etc.
 - Skillset in scale, mood, and directional cues
- Movie directing for pacing action and narrative
- Game design for matching game mechanics with intended experience

Useful Skillsets

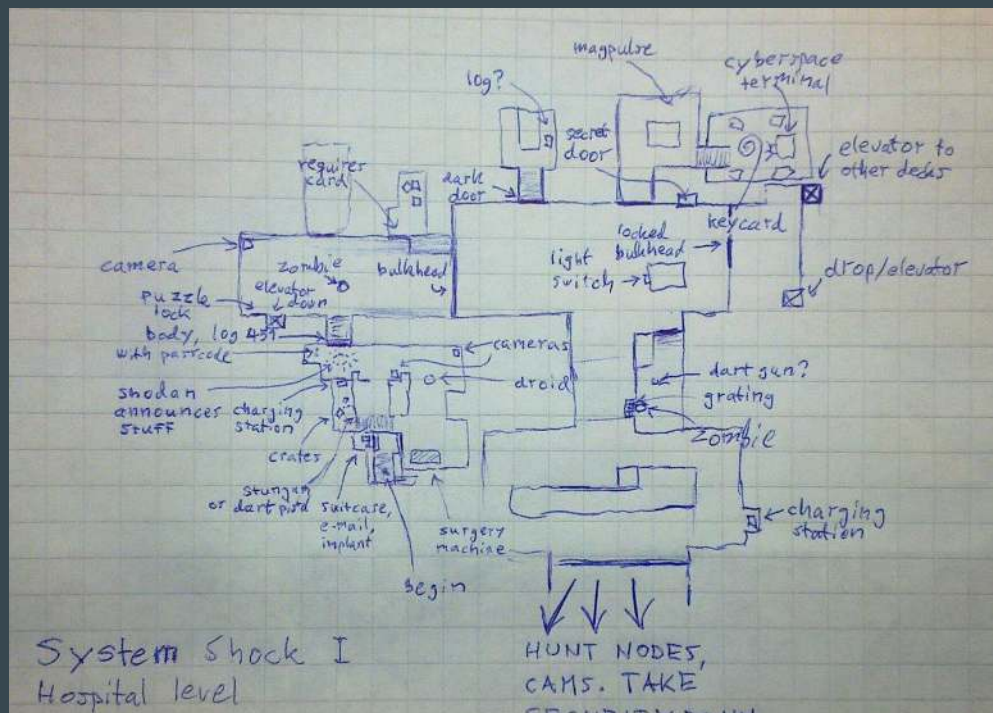
Different game genres require different skillsets

- Linear games benefit from carefully constructed sequences
- Open-world games benefit from well-placed interactive events in the middle of open space
- Multiplayer games needs to accommodate different play styles and team strategies

Useful Tools



Useful Tools



<http://www.destructoid.com/a-collection-of-videogame-maps-drawn-from-memory-219661.phtml>

Useful Tools



Useful Tools

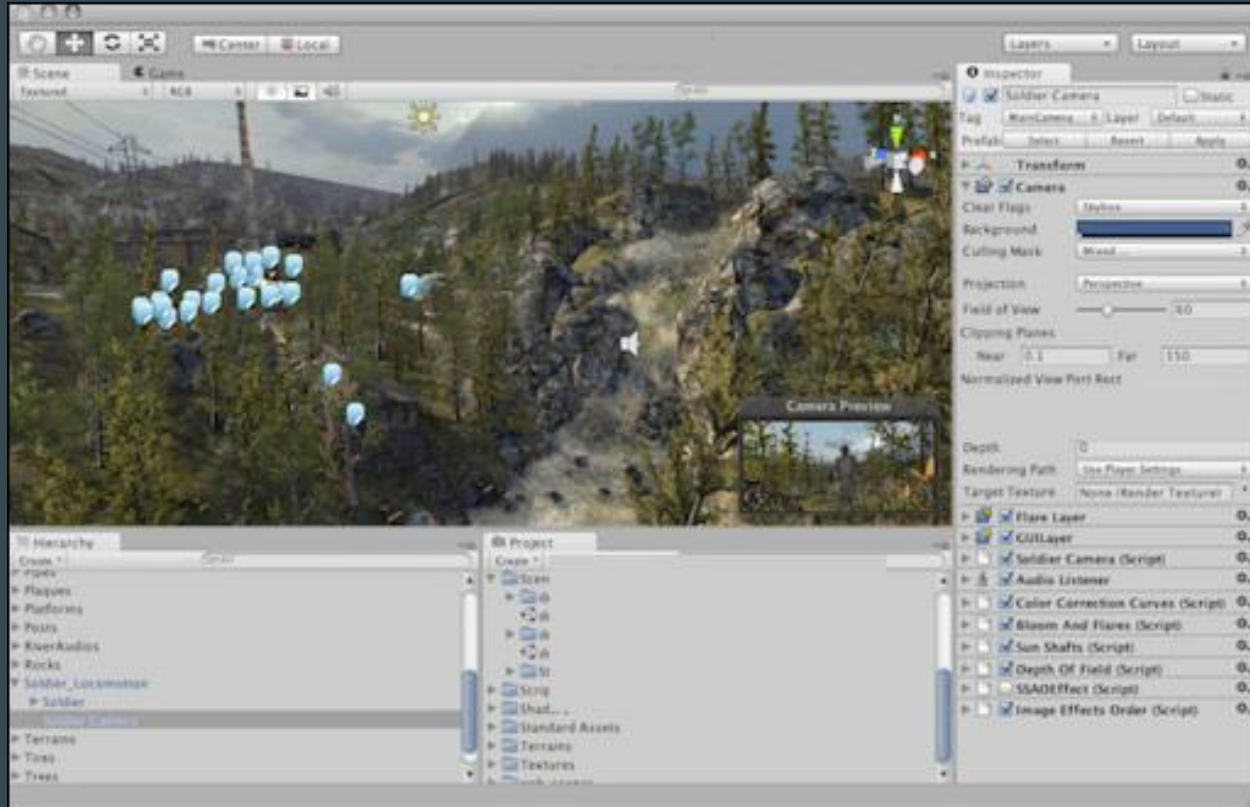


Useful Tools

- Tiled
 - <http://www.mapeditor.org/>
- Mappy
 - <http://www.tilemap.co.uk/mappy.php>



Useful Tools



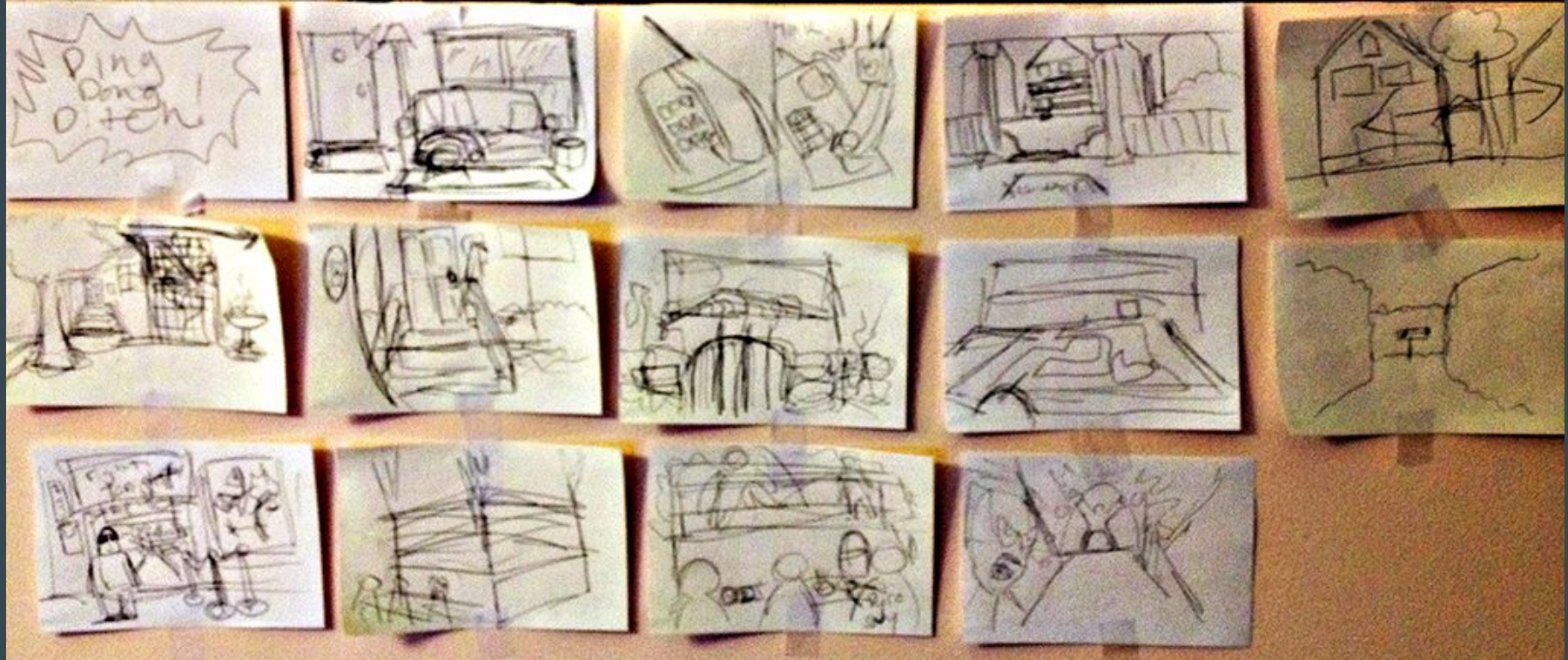
Step 1: Know Your Game (Mechanics and Genre)

- Discuss with your team the game's target experience/genre
- Know your tools!
- Brainstorm all the possible game mechanics
 - Don't forget to list all *combinations* of mechanics, too
 - You can list them in a table!
 - Discuss what experience the mechanic will convey (thrills? satisfaction? tragedy?)
- Discuss the aesthetic theme of the game (space exploration? nature exploration?)

Step 2: Storyboard a Narrative/Experience

- Draw out a simple, short experience on small pieces of paper
 - Create a sketch of a room, and a description of what's going on (e.g. sniping segment, running segment, platforming segment, etc.)
 - recommended: indicate sequence of mechanics used (action, puzzle, etc.)
 - recommended: indicate intended play-length
- Using these segments, brainstorm on a narrative
- Order these papers in a sequence based on this narrative
- Review with your team. Re-organize the papers as necessary

Step 2: Storyboard a Narrative/Experience

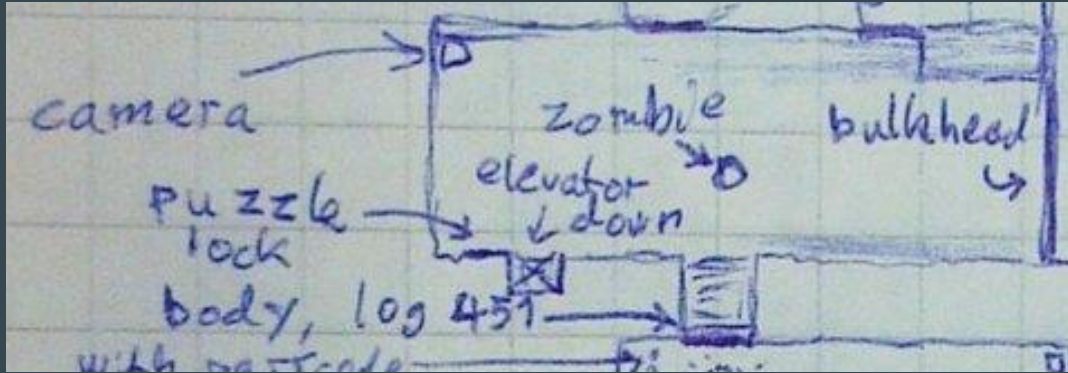


Step 3: Sketch Out Each “Room”

Take a sketch from step 2, and plan out a room for it.

- Be sure to indicate where the player starts, and where they’re supposed to go.
- Indicate where interactable objects will be placed, and the intended sequence to use them, if any.
- Note where the enemy will be placed, and when (or how) they’ll attack the player.
- Add any notes about events, like a cutscene’s trigger box

Step 3: Sketch Out Each “Room”



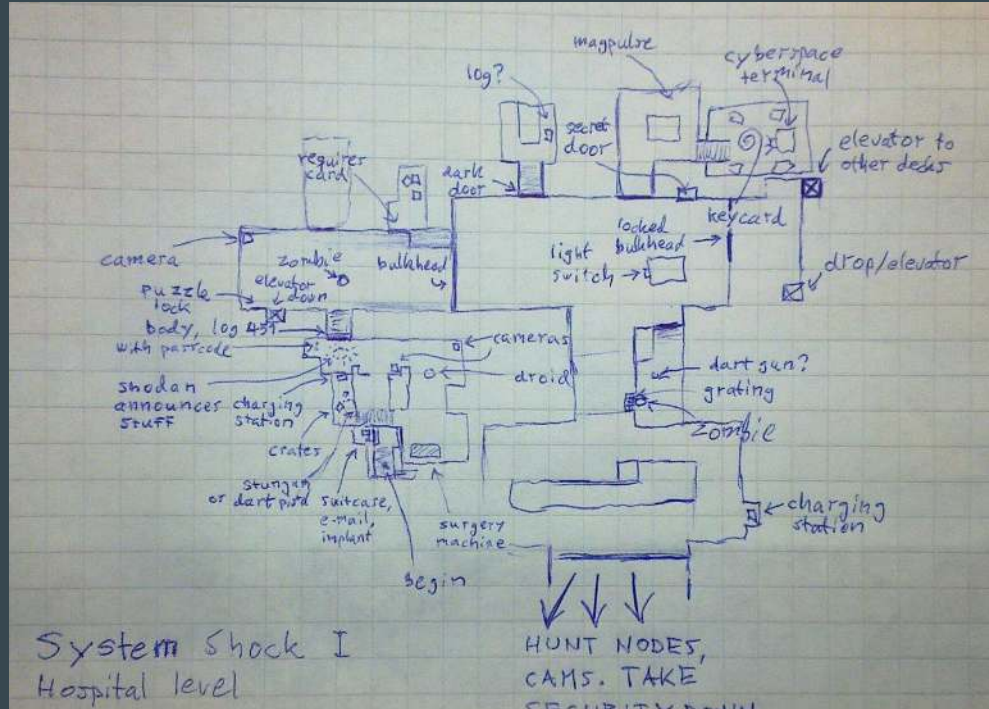
<http://www.destructoid.com/a-collection-of-videogame-maps-drawn-from-memory-219661.phtml>

Step 4: Connect Each “Room” Into a Level

Collaborate with an artist, and blueprint how to connect each room. These includes corridors, doors, roads, elevators, stairs, etc.

- Longer connections = longer breaks
- Use elevators/stairs for elevation. Works great in 3D.
- Levels feel more cohesive when something in one room affects another
- Open-world and action games benefits from flatter designs.
- Puzzle games benefits from more compact designs.
- Include distance of each unit

Step 4: Connect Each “Room” Into a Level



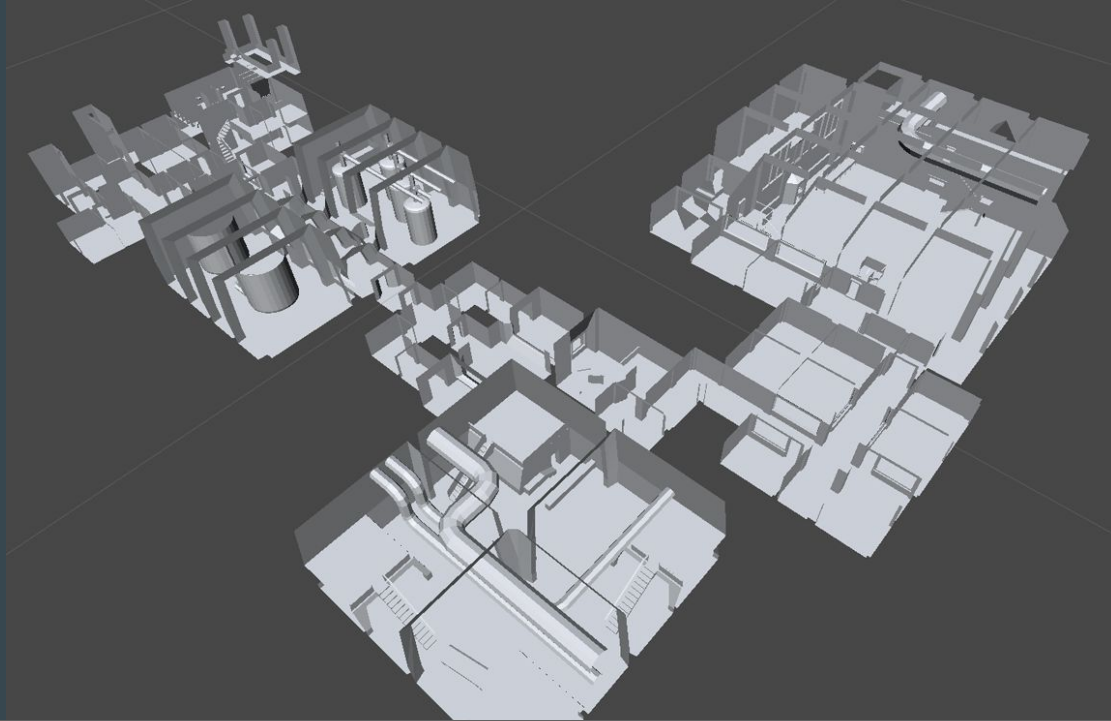
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Step 5: Construct The Level (Polish As Necessary)

Take Unity/Unreal/Super Mario Maker/whatever, and construct the level into the game.

- Keep graphics simple during this “white-blocking” phase
- If using Unity/Unreal engines, create “Lego pieces”
- Playtest your level. A lot.
- Make sure you adjust the level to the proper difficulty
- Provide visual and/or auditory cues if playtesters get stuck

Step 5: Construct The Level (Polish As Necessary)



<http://www.hobbygamedev.com/int/anti-design-in-ge007/>

Technique: signposting

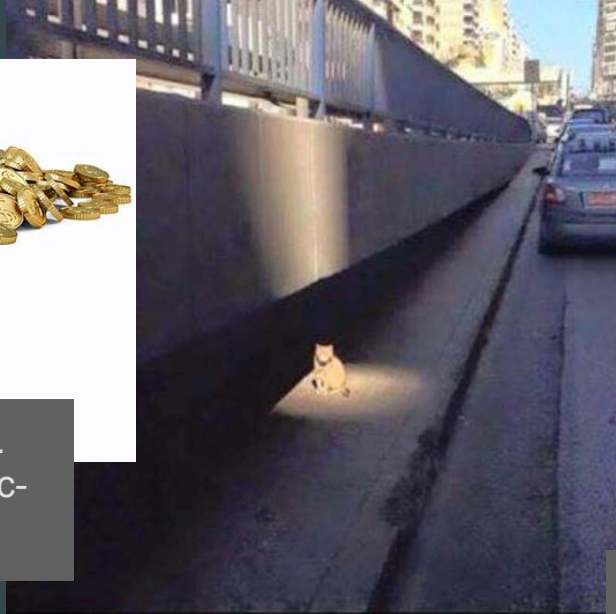
Visual or auditory cue to direct the player's attention to a specific direction



Technique: signposting

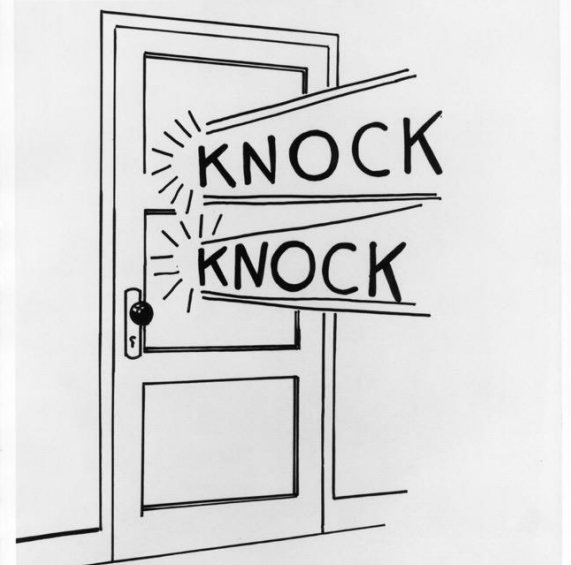


<http://promotionstocksecrets.com/bizm-litigation-will-the-second-follow-the-bread-crumbs/>



If videogames have taught me anything,
this cat has a side quest to offer me

[ifunny.com](http://funny.com)



<http://www.domitall.com/wordpress/?p=3300>

Technique: gating

Barriers that can be opened after meeting a certain criteria; they block off a section of a level



Technique: gating

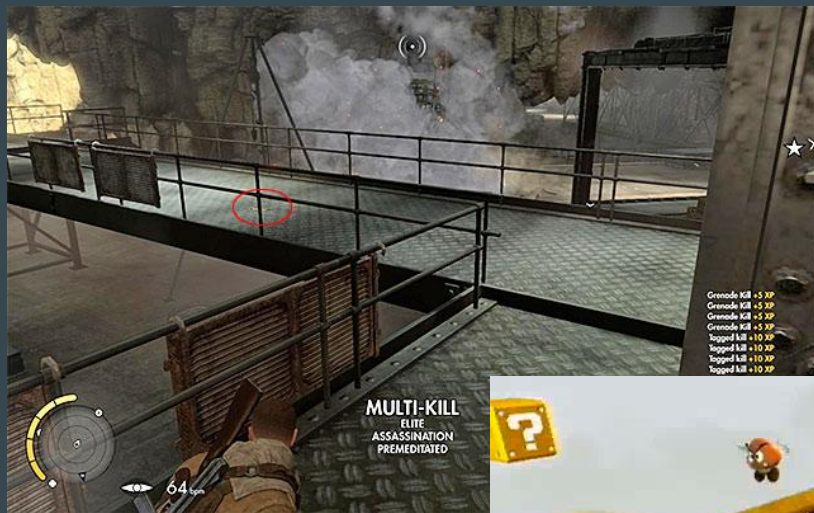


Technique: risk vs reward

Any branching paths or decisions that has different risks and (usually) varying rewards



Technique: risk vs reward

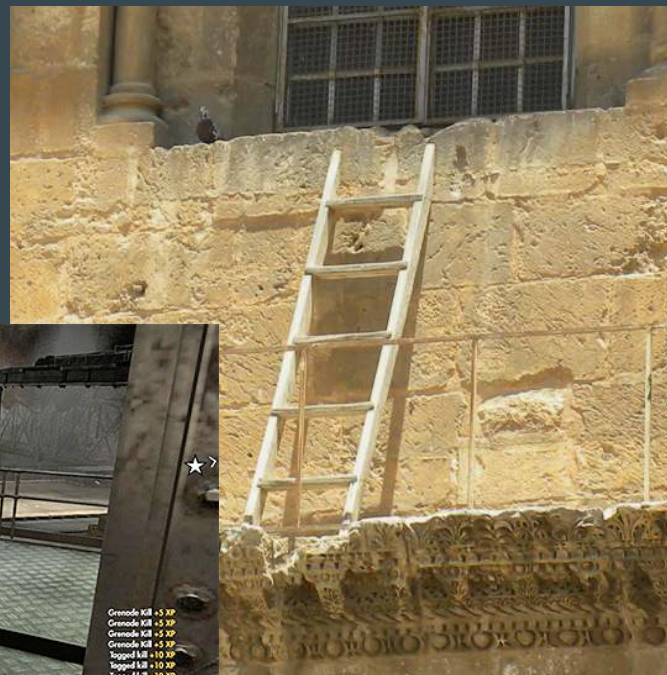
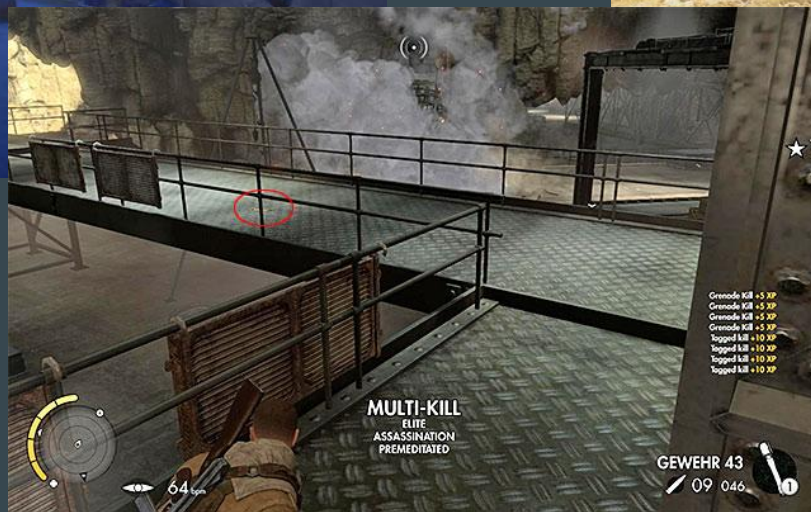


Technique: choke points

Bottlenecks that squeezes enemies into a small space; useful for crowd-control and pacing in multiplayer games



Technique: choke points

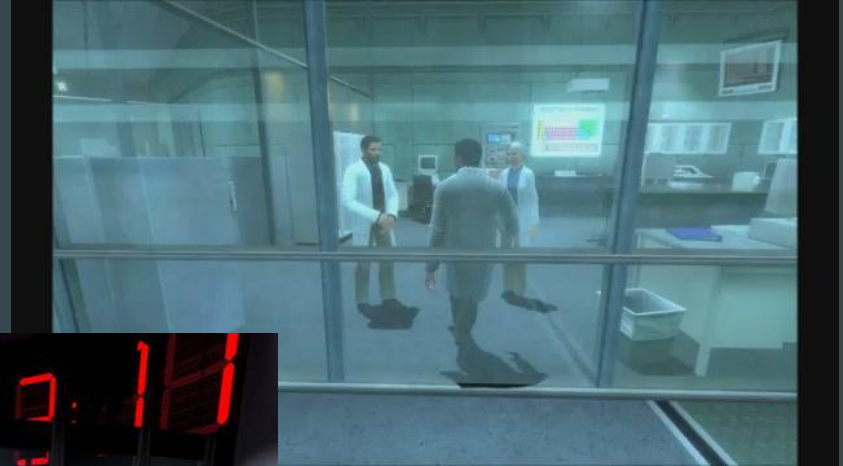


Technique: environmental storytelling

Environmental aesthetics that provides a narrative despite the player still being in full-control



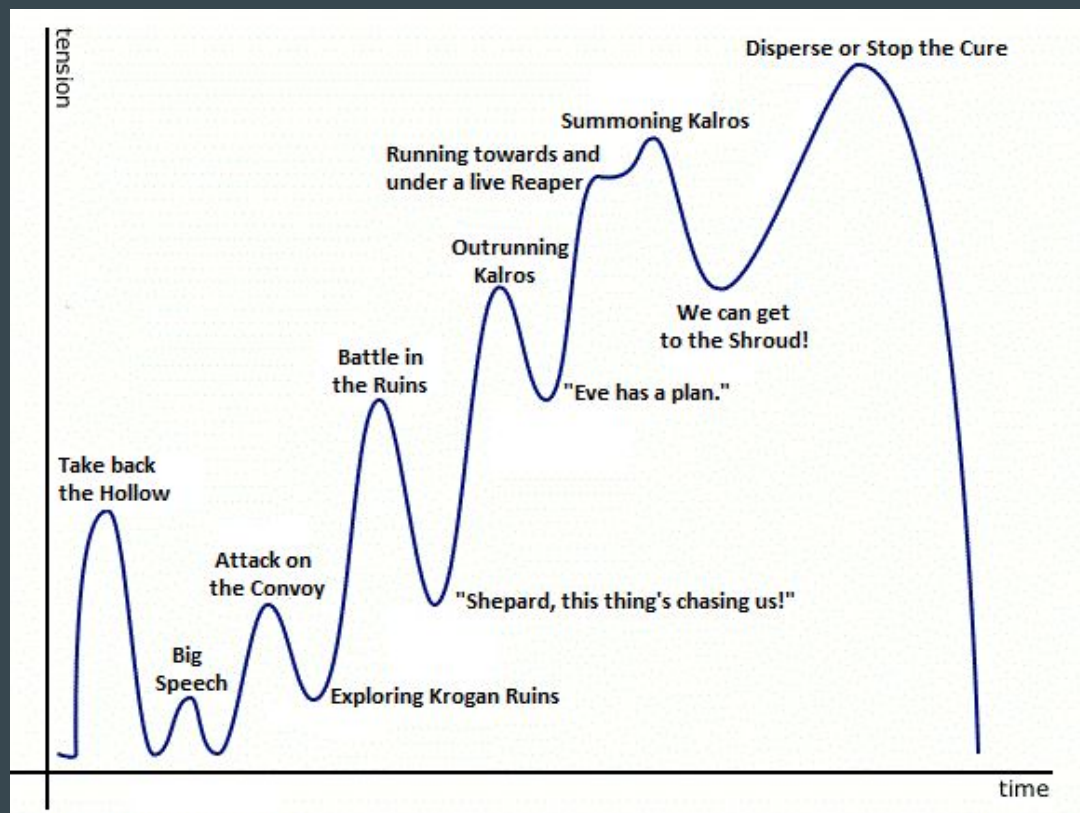
Technique: environmental storytelling



Pacing

- Determine the conflicts in your game
 - e.g. lots of enemies, an unsolved puzzle, etc.
 - also discuss the ideal duration of these conflicts
- Determine the markers of progression
 - e.g. rest points immediately following a conflict, or rewards
- Determine what is an ideal duration of a level
- Design a level that repeats and escalates the conflict-reward cycle

Pacing



Pacing

Gameplay changes (puzzles in action games, etc.) are a great way to pace a game

- They keep the experience fresh
- Keep gameplay changing segments brief, so as to not lose of the main gameplay
- Recommended for them to be introduced mid-and-late in the game

Pacing

Don't forget to change the aesthetic theme (e.g. closed to open space, ice world to fire world, etc.) as well

- They keep the experience fresh
- Provides useful landmarks within a level
- The larger the level, the more important aesthetics become
 - e.g. puzzle games, which usually feature compact levels, require less changes in aesthetics (see Portal)

Tutorials

- Tutorials should aim to do two things
 - Teach the player how to play
 - Keep the player excited, making them want to play more
- Tutorial segments have a teach, then practice cycle
 - Gating is the most common technique to encourage practicing
- Nintendo recommends making tutorial levels last
 - Developers will have a better understanding of their game by then

Tutorials

Different ways to teach:



Self-discovery



Simon-says



Recommendations about instructions

- Avoid giving instructions as much as possible
 - Reserve instructions for controls only
- When instructions are necessary, keep them short
 - Less reading, the better
 - Some games only provide an image of a button (see Braid)!
- Make instructions skippable & repeatable!
 - Skippable instructions help pros; repeatable helps beginners
 - Some games lets the player decides to initiate the instructions via interactable NPC, signposts, etc. (see Kokiri Forest in Ocarina of Time)

How to make tutorials

- First, list all the components the player needs to learn, and in what order
 - This includes movement, jumping, interaction, attack, combos, etc.
 - Only assume players can find the proper button on their controller when instructed
- Decide what is the bare-minimum in this list the player needs to learn before getting into the game
 - Typically, these are control-related issues that require instructions
 - It's recommended to get the action started as soon as possible; the later, more advanced elements can be taught later

How to make tutorials

- Design brief segments to allow the player to practice what they learned safely
 - e.g. FPS often only lets the player move the camera, allowing them to get some bearings on their surrounding
 - e.g. For movement, safe, open-space is great
- Once the player learns the bare-minimum, escalate the challenge while letting the player rehearse what they learned
 - This brings the action to the player sooner
 - Also serves to cement what they learned into memory

How to make tutorials

- Advanced tutorials (usually game mechanic combinations) should build on top of things learned from previous tutorials
 - In most cases, players won't need instructions, as most controls are covered
- Advanced tutorials follow the same pattern:
 - Start with a brief, safe practice segments
 - Once the player surpasses this segment, escalate the challenge while still practicing the same mechanics

Other Tips

- *Do* collaborate with an environmental artist and sound designer from start to end
- Regardless of genre, the best levels are those with either:
 - A consistent theme, or
 - A cohesive narrative
- Playtest often, especially with people who hasn't played the game before
- Provide early cues of danger, to avoid frustration
 - Though, horror games can benefit from a lack of warning

Other Tips

- Starting position, save points and respawn point should be safe
- For more linear games, always keep at least one path in a level obvious at a glance
- Remember: secrets encourages exploration
 - Great for open-world games, multi-player, etc.
 - Distracting for linear narrative games