Game Design

CENTER FOR GEOGRAPHIC INFORMATION SCIENCE & TECHNOLOGY

Geographic Information Systems for Disaster Resilience Spatial Thinking

NSF

Describing Games

Sources:
RIT Faculty: Bayliss, Jacobs, Schwartz, Vick
References: Adams, Fullerton, Huizinga, Salen & Zimmerman,
and wherever Bayliss & Jacobs lifted the images ☺

Game Analysis

- What is analysis?
- Identifying formal elements
- Describing those elements
- Critique and Experience
- Back to the beginning…

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Play & Fun

- Fun: not work (DIS)
- Play: "nonessential, recreational human activities" (Adams)

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Magic Circle (from Adams)

- From Huizinga (Homo Ludens, popular in game industry)
  - "theoretical concept related to the act of pretending that occurs when we choose to play a game"
  - A 'place' where we play and abide by rules
  - What would normally be fantasy in real world becomes real
- Akin to immersion?

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Game

- What is it?
- Everyone seems to know, but is it easy to define?
- Examples:
  - Jigsaw puzzle
  - Tetris
  - Your job

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Game Definitions (Rules of Play)

Elements of a game definition	Parlett	Abt	Huizinga	Caillois	Suits	Crawford	Costikyan	Avedon |Sutton-Smith
Proceeds according to rules that limit players	√	√	√	√	√	√		√
Conflict or contest	√					√		√
Goal-oriented/outcome-oriented	√	√			√		√	√
Activity, process, or event		√			√			√
Involves decision-making		√				√	√	
Not serious and Absorbing			√					
Never associated with material gain			√	√				
Artificial/Safe/Outside ordinary life			√	√		√		
Creates special social groups			√					
Voluntary				√	√			√
Uncertain				√				
Make-				√		√		
Inefficient					√			
System of parts/Resources and Tokens						√	√	
A form of art							√	

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Game Definitions (Rules of Play)

- **A *game* is a system in which players engage in an artificial conflict, defined by rules, that results in a quantifiable outcome.**
- This definition structurally resembles that of Avedon and Sutton-Smith, but contains concepts from many of the other authors as well. Here are the definition's primary ideas:
  - *System:* We introduced the concept of a system in chapter 5. Systems are fundamental to our approach to games.
  - *Players:* A game is something that one or more participants actively play. Players interact with the system of a game in order to experience the play of the game.
  - *Artificial:* Games maintain a boundary from so-called "real life" in both time and space. Although games obviously occur within the real world, artificiality is one of their defining features.
  - *Conflict:* All games embody a contest of powers. The contest can take many forms, from cooperation to competition, from solo conflict with a game system to multiplayer social conflict. Conflict is central to games.
  - *Rules:* We concur with the authors that rules are a crucial part of games. Rules provide the structure out of which play emerges, by delimiting what the player can and cannot do.
  - *Quantifiable outcome:* Games have a quantifiable goal or outcome. At the conclusion of a game, a player has either won or lost or received some kind of numerical score. A quantifiable outcome is what usually distinguishes a game from less formal play activities.
- **Game design is the process by which a game designer creates a game, to be encountered by a player, from which meaningful play emerges.**

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Game Definitions (shorter)

- A suite of meaningful choices. (Vick)
- Others?
- OK…so, what is the player experience?

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Gameplay

- The navigation of a suite of choices where each decision leads to an action that has a discernable outcome. (Vick)
- Challenges and actions the game offers the player. (Adams)
- The experience that a game provides to the player(s). (DIS)
- https://en.wikipedia.org/wiki/Gameplay?
- Still need a way to think about analysis…

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Game as a System (Vick)

- Formal system:
  - Objects: parts, elements, variables; physical or abstract, Attributes: properties defining interaction
  - Internal relationships: object to object
  - Environment: the context of the SYSTEM that gives it meaning
- Game as a system:
  - Objects: characters, PC, HUD, game items, rules, etc.
  - Attributes: properties of characters, predicates within rules
  - Internal relationships: game events, AI rules, item relationships, Item-Object relationships
  - Environment: game world (NOT A 3D space), play environment (3D Space!), context of rules
- Now, look at components of system more closely…

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Formal Elements of Games

- Players
- Objectives
- Procedures
- Rules
- Resources
- Conflict
- Boundaries
- Outcome
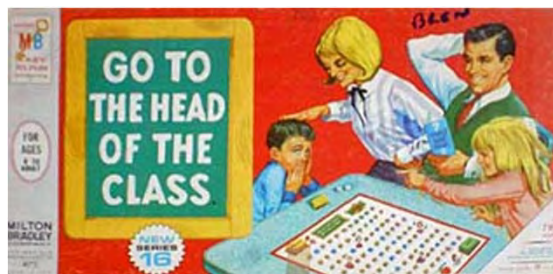
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Players

- Number
- Age
- Roles

Players: Interaction

- Player vs. Game
- Players vs. Game
- Player vs. Player
- Unilateral Competition
- Multilateral Competition
- Cooperative Play
- Team Competition

Objectives

- Capture
- Chase
- Race
- Alignment
- Rescue/Escape
- Forbidden Act
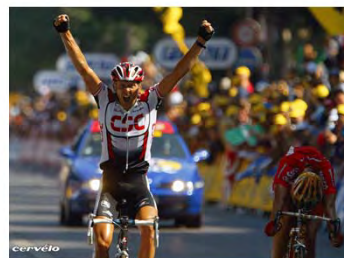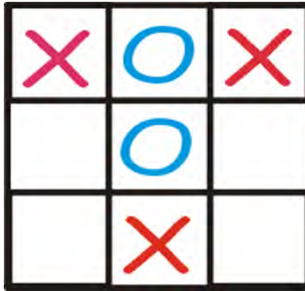- Construction
- Exploration
- Solution
- Outwit

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Objectives: Capture

Objectives: Chase

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Objectives: Race

Objectives: Alignment

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Objectives: Rescue/Escape

Objectives: Forbidden Act

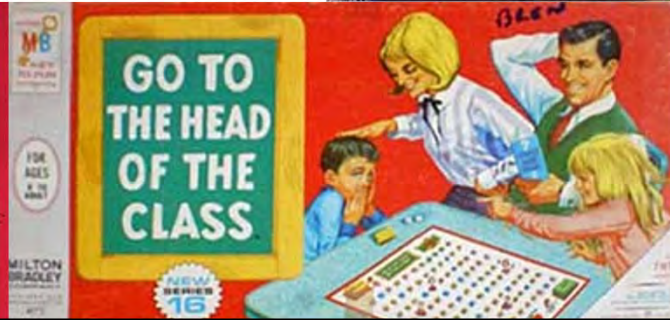# Objectives: Construction

Objectives: Explore

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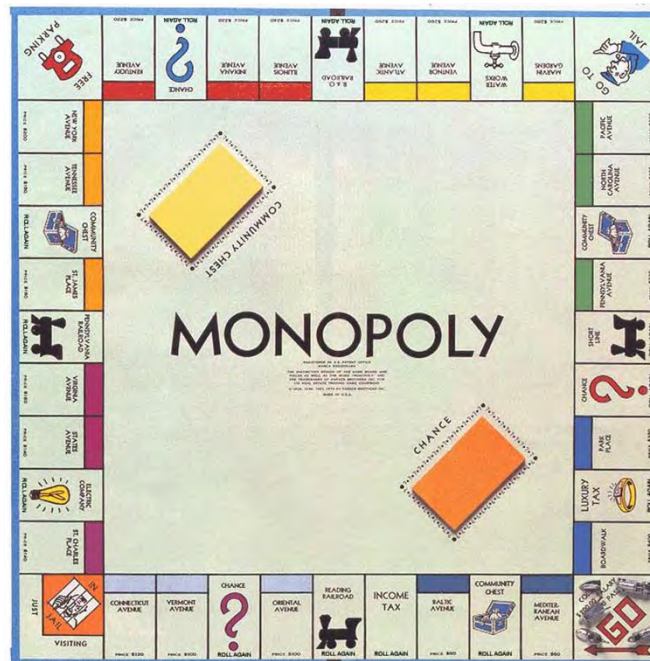# Objectives: Puzzle / Solution

Objectives: Outwit

Procedures

- Starting Action
- Progression of Action
- Special Action
- Resolving Action

Rules

- Too Many or Too Few?
- Which Define Objects and Concepts?
- Which Restrict Actions?
- Which Determine Effects?
- Simplified Rule Sets?
- House Rules?

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Resources

- Currency
- Stocks
- Loans
- Life Cards
- Profession Cards
- House Cards
- Spouse and Kids
- Specialized Terrain
- Actions

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Resources: Armor, Weapons, Lives, …

Resources: Time

Conflict

Obstacles
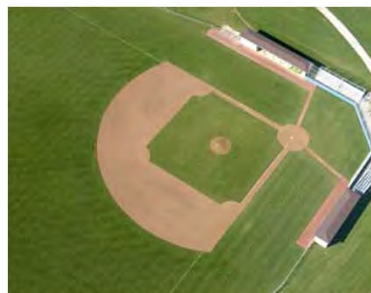- Odds of the hands

Opponents
- Those other dogs

Dilemmas
- Know when to hold 'em, know when to fold 'em

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Boundaries

- Physical
- Rule-Based
- Emotional

Outcomes

- High Score
- Flag Capture
- First Across the finish line
- Tied to objectives
- See also **VICTORY CONDITIONS**

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Game Mechanics

- Core mechanic (Vick):
  - action player has to repeat to succeed
  - essential piece of play activity
  - allows player to make meaningful choices
- Core mechanics (Adams):
  - Data and algorithms that precisely define the games rules and internal operations.
  - Hidden from player, but experienced via gameplay
- Rules + Procedures (Bayliss)
- Algorithmic description of what the player does/can do (DIS)
- https://en.wikipedia.org/wiki/Game_mechanics?

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Mechanics Add Dynamics

- Combinations of rules can lead to special system dynamics within a game system
- Example:
  - A dead player comes back to life at a spawn point in a multiplayer game.
  - This is a rule.
  - Spawn camping is an example dynamic that arises from this rule.

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Some Game Mechanics

- Space
  - Discrete/continuous
  - # dimensions
  - Bounded areas connected?
- Objects, attributes, and states
  - Secrets
- Actions

- Skill
  - Physical
  - Mental
  - Social
- Chance
  - Rolling the dice
  - Estimating chance is a skill

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Genres

- Game Genre:
  - Collection of a set of game mechanics that together make for engaging play (Vick)
  - Thematic grouping of games based on gameplay (DIS)
- Art and consumption—do we need game genres?

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Example Genres

- FPS, RPG, RTS, … name some other genres
- What elements do they have in common?
- Any "mixed genres?" are they all mixed somehow?

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Gameplay vs. Game Mechanics

- What the player can do vs. what the player experiences (DIS)

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Emergent Gameplay

- Is a "fish just a fish?" (messages/meanings in media)
- Players extend/exploit/create rules
- Possibly unanticipated by designer
- Hints of social gaming…

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Game Balance

- Often asked about game theory and AI
- Mathematical balance
- Solved games?
- How to ensure "fun" and flow and fairness?

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Leftover Stuff

- So you want to be a game designer?
  https://www.youtube.com/watch?reload=9&v=zQvWMdWhFCc
- Game development resources: http://gamedev.net
- Everything related to games: Gamasutra
- Game careers: http://gamecareerguide.com/ (many other links, too)
- ATLAS: http://bit.ly/programgames

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