Introduction to Video Game Design

- The business of games
- Ludology
- Game Theory
- "Funativity"
- Abstract Rules
- Concrete Rules
- Scratch
Video Games = Big Business

**U.S. video game sales 2009, $20.2 billion (i).**
- True contribution to economy probably double that (toys, videos, movies, costumes, conventions).
- Directly employees over 250,000 people.
- Even those figure under-estimates the impact the game industry has on industry.

**Video games driving force behind:**
- CPU power.
- Graphics processing power.
- Rendering and 3D projection algorithms.
- Interest in computer science/mathematics.

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i. By contrast, U.S. guns and ammunition sales 2009, $2.1 billion. GLOBAL cosmetics sales 2009, less than $40 billion.
The Business of Games

Developing a title for the PS3 or Xbox 360
- Costs $20 to $40 million on average
- GTA IV $100 million development budget.
- Marketing costs are added on top of that.

Large Game Developers/Publisher Employ
- Graphic Artists, Animators, Writers
- Vocal Talent, Motion Capture Specialists
- Programmers, Tool Creators, QA testers,
- Project Managers, Directors
- Media Creators, Marketers, Salespersons
Outline of Game Development Pipeline
Questions

With so much money at stake, thousands of papers and books have been written on the subject of game design/development.

Some common questions are:

1. What makes a good game?
   - Profit, entertains, educates, ... is "fun".
2. What makes a game fun?
3. Can we come up with a methodology for creating successful games?
Ludology

*From the Latin ludus (game) + -logy.*
The study of games and other forms of play.

Ludologists analysis games in terms of the abstract and formal systems that the games describe. In other words, the focus of ludologists are on "the rules of a game"

Papers and books about ludology are often categorized under the title "game studies". Game studies also encompasses a competing view that called "narratology"

The narratological view is that games should be understood as novel forms of storytelling and can thus be studied using theories of narrative.

(Question: What is the compelling story behind "tetris"?)
Game Studies \( \neq \) Game Theory

Don't confuse "game studies" with "game theory". They are not the same thing.

**Game Theory:**
A mathematical method of decision-making in which a competitive situation is analyzed to determine the optimal course of action for an interested party (agent). Game theory is often used in politics, economics and military planning.

Note: We also use Game Theory when contemplating "agents" within a game.
"Funativity"

How, why is something fun?
Do these kittens look like they are having fun?
"Theory of Natural Funativity"

- All fun derives from practicing skills that (previously) insured species survival.
- Skills may relate to earlier developmental context, but appear disguised in a more modern form.
- Games are safe way to "practice" skills.
- Three overlapping categories
  - Spatial Reasoning (Physical)
  - Pattern Recognition (Mental)
  - Social
Funativity & Humans

● For most of our species’ history we were tribal hunter/gatherers.

● Current popular games reflect this:
  ○ Shooters, sports games, wargames = hunting
  ○ Pattern games, powerups, resources, = gathering
  ○ High scores, head-to-head, Sims, MMO = tribal interaction
Spatial Reasoning (Physical)

Abstract Definition: Reasoning about objects in 3D space and how they might interact (includes your own body, hand-eye coordination).
Pattern Recognition (Mental)

Abstract Definition: Recognizing patterns in organized sets of data, remembering chains of linked events that are significant.
Social

Abstract Definition: Practicing interpersonal communication skills, competing/cooperating with others or modeling dynamics of social situations.
Concrete Components

Along with the abstract concepts of spatial reasoning, pattern recognition and social interaction, research has identified many concrete things that can also improve a player's perception of a game:

1. Multiple clear achievable goals.
2. The illusion of choice.
3. Clear punishments and rewards.
Punishments and Rewards

Some researchers suggest that modern game design is moving beyond "funativity" and moving towards direct conditioning of players aimed at getting them to play all the time (game addiction).

So what makes a game fun?

Abstract Components:
1. Spatial Reasoning
2. Pattern Recognition
3. Social Interaction

Concrete Rules:
1. Multiple clear achievable goals.
2. The illusion of choice.
3. Clear punishments and rewards.

Many great games have all of these components. Are there other rules... yes.
A methodology for creating successful games?

Q: Knowing what we know now... can we create a formula or a pattern for creating popular game.

A: No. Many useful game design methodologies have been suggested (MDA), and they do help insure that a game gets developed consistently and within time and budget limitations.

But every great game starts with a great idea, and nobody can predict where those come from.