Foundations of Interactive Game Design

04: Mechanics, Dynamics and Aesthetics

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Today’s plan

- Siegebreakers
- Narrative Summit Reminder
- WoW discussion
- The horror of blue slides.
Why is WoW a great game?

- Provides many decision points
- Multiple, non-linear goals
- Provides plenty of opposition
- Multiple, defined resources
- Single, highly defined avatar
- Good presentation of information
- Facilitates and welcomes diplomacy
- Loads of color including player created fiction
Why is WoW a great game?

- Simulated monsters, NPC groups, NPCs and economy
- Loads of monsters, NPCs
- “Side identification”: Alliance vs. Horde
- Allows players to roleplay their characters.
- Encourages socializing through guilds and chat.
- Provides narrative tension through quests and combat
Mechanics, Dynamics, Aesthetics

A Formal Approach to Game Design

Marc “MAHK” LeBlanc
April 2004
Games are State Machines

- *All* games are computer games.
- Game design transcends media.
Part I: Games as Software
This is Not a Programming Talk

Topics I *Won’t* Discuss:

- Graphics & Sound
- Real-Time Simulation
  - Physics
  - AI
  - Network
  - Object Database
- The Console Environment
Games vs. Other Software

What makes a “program” a “game?”

• Fun!

• That is, games serve an *emotional* purpose, not a *pragmatic* one.

• This isn’t a definition.
Games as Software

Code
Games as Software

Code → Process
Games as Software

- Code
- Process
- Requirements
Games as Software

Code → Process → Requirements

Rules
Games *as* Software

- Code
- Process
- Requirements
- Rules
- Game “Session”
Games as Software

Code → Process → Requirements

Rules → Game “Session” → “Fun”
A Design Vocabulary

- Code
- Process
- Requirements
- Rules
- Game “Session”
- “Fun”
A Design Vocabulary

Mechanics → Process → Game “Session” → Requirements → “Fun”
A Design Vocabulary

Mechanics -> Dynamics -> Requirements

"Fun"
A Design Vocabulary

Mechanics  Dynamics  Aesthetics
Definitions

• Mechanics: The rules and concepts that formally specify the game-as-system.
• Dynamics: The run-time behavior of the game-as-system.
• Aesthetics: The desirable emotional responses evoked by the game dynamics.
The Designer and The Player

Designer

Mechanics

Dynamics

Aesthetics

Player
The Player’s Perspective

Mechanics → Dynamics → Aesthetics
The Designer’s Perspective

Mechanics ← Dynamics → Aesthetics
MDA is a “Taxonomy” of Design Knowledge

- Knowledge of Aesthetics
- Knowledge of Dynamics
- Knowledge of Mechanics
- Knowledge of the *interactions* between them.
Mechanics

• What are the mechanics of World of Warcraft?
• Specifically, can we identify any “standard” mechanics.
Aesthetics

• What are the aesthetics of World of Warcraft?
• That is, what’s so fun about it?
Dynamics

• How did the rules create the fun?
• What patterns emerged in the dynamics of the game?
Discussion

- What other settings, genres or subjects might fit this game?
Part II: Aesthetics Explored
“Requirements Analysis” for Games

• We need to understand the emotional requirements of our software.
Requirements Analysis...

Scenario: The customer wants to cancel an order and get a refund.

Actions:
- Log onto website.
- Navigate to “pending orders” page.
- Click “cancel” button next to order.
...for Games?

Scenario: The player wants to blow stuff up.
Actions:
- Find rocket launcher.
- Find victims.
- Kick major booty.
What’s the Difference?

• With productivity software, the user brings his goals to the application.
• With games, the application brings goals to the user.

• Software eschews emergent behavior.
• Games embrace it.
We Need an Aesthetic Lexicon

We need to get past words like “fun” and “gameplay.”

• What kinds of “fun” are there?
• How will we know a particular kind of “fun” when we see it?
Eight Kinds of "Fun"

1. Sensation
   *Game as sense-pleasure*

2. Fantasy
   *Game as make-believe*

3. Narrative
   *Game as drama*

4. Challenge
   *Game as obstacle course*
Eight Kinds of "Fun"

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3. Narrative
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4. Challenge
   *Game as obstacle course*

5. Fellowship
   *Game as social framework*

6. Discovery
   *Game as uncharted territory*

7. Expression
   *Game as self-discovery*

8. Submission
   *Game as pastime*
Clarifying Our Aesthetics

- Charades is “fun.”
- Quake is “fun.”
- Final Fantasy is “fun.”
Clarifying Our Aesthetics

- **Charades**: Fellowship, Expression, Challenge
- **Quake**: Challenge, Sensation, Competition, Fantasy
- **Final Fantasy**: Fantasy, Narrative, Expression, Discovery, Challenge, Masochism

- *Each game pursues multiple aesthetics.*
- *No Grand Unified Theory.*
Clarifying Our Goals

• As designers, we can choose certain aesthetics as goals for our game design.

• As with other software, our process is driven by requirements, not features.

• However, one word is not enough to describe a goal.
Aesthetic Models

• Our substitute for “use cases” or “scenarios.”
• A rigorous definition of an aesthetic goal.
• Serves as an “aesthetic compass.”
• States criteria for success as well as possible modes of failure.

Some examples...
Goal: Competition

Model: A game is *competitive* if:

- Players are adversaries.
- Players have an *ongoing emotional investment* in defeating each other.

Some Failure Modes:

- A player feels that he can’t win.
- A player can’t measure his progress.
Goal: Realistic Flight Simulation

Possible Models: Our flight dynamics are realistic if:

• They match a mathematical formula, or;
• They pass our “realism checklist,”

Failure Modes:

• Counter-intuitive system behavior.
Goal: Drama

Model: A game is *dramatic* if:

- Its central conflict creates *dramatic tension*.
- The dramatic tension builds towards a *climax*.
Goal: Drama

Failure Modes:

• Lack of conflict.
• Lack of tension.
  – The conflict’s outcome is obvious (no uncertainty).
  – No sense of forward progress (no inevitability).
• Tension does not increase towards a climax.
Part III: Dynamics in Detail
Understanding Dynamics

• What about the game’s behavior can we \textit{predict} before we go to playtest?
• How can we \textit{explain} the behavior that we observe?
Formalizing Game Dynamics

The "State Machine" Model

Examples: Chess, Quake
Models of Game Dynamics

• Again, no Grand Unified Theory
• Instead, a collection of many Dynamic Models.
• Dynamics models are analytical in nature.

Some examples...
Example: Random Variable

This is a model of 2d6:
Example: Feedback System

A feedback system monitors and regulates its own state.

Room

Heater

Cooler

Thermometer

Too Cold

Too Hot

Controller

An Ideal Thermostat
Example: Operant Conditioning

- The player is part of the system, too!
- Psychology gives us models to explain and predict the player’s behavior.
Where Models Come From

• Analysis of existing games.
• Other Fields: Math, Psychology, Engineering…
• Our own experience.

On to Mechanics...
Part IV: Mechanics
There’s a vast library of common game mechanics.
Examples

• Cards: Shuffling, Trick-Taking, Bidding
• Shooters: Ammunition, Spawn Points
• Golf: Sand Traps, Water Hazards
Mechanics vs. Dynamics

• There’s a grey area.
  – Some behaviors are direct consequences of rules.
  – Others are indirect.
  – “Dynamics” usually means the latter.
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• Dynamics and Mechanics are different views of games.
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• Dynamics and Mechanics are different *views* of games.

• Dynamics *emerge* from Mechanics.
Part V: MDA Interactions
Interaction Models

• How do specific dynamics emerge from specific mechanics?
• How do specific dynamics evoke specific aesthetics?
Example: Time Pressure

• “Time pressure” is a dynamic.
• It can create dramatic tension.
• Various mechanics create time pressure:
  – Simple time limit
  – “Pace” monster
  – Depleting resource
• Read Chapter 1 in Challenges for Game Designers.