CS 498

Video Game Design & Development Methodologies

(For internal use only)

MDA: A Formal Approach to Game Design

From a GDC Workshop Run by:

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- Rob Fermier
- Austin Grossman
- Frank Lantz
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- Steve Librande
- Katie Salen
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Also Helping Out:

- Art Min
- Robin Hunicke

MDA: Mechanics, Dynamics & Aesthetics: The Framework

Marc LeBlanc: 2003

First presented in 2001 at GDC in an embryotic form.

By 2003 it had reached its current form.

The following are from slides by Marc LeBlanc presented in the Workshop he gave in 2003

MDA: Mechanics, Dynamics & Aesthetics: The Framework

Marc LeBlanc: 2003

- Organized around the designer-player relationship.

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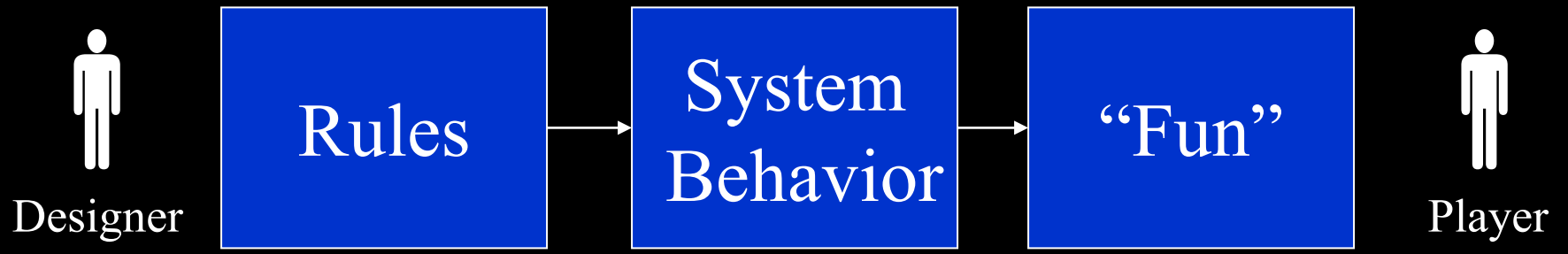
- Organized around the designer-player relationship.

- Grounded in a formal approach.



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Program Development

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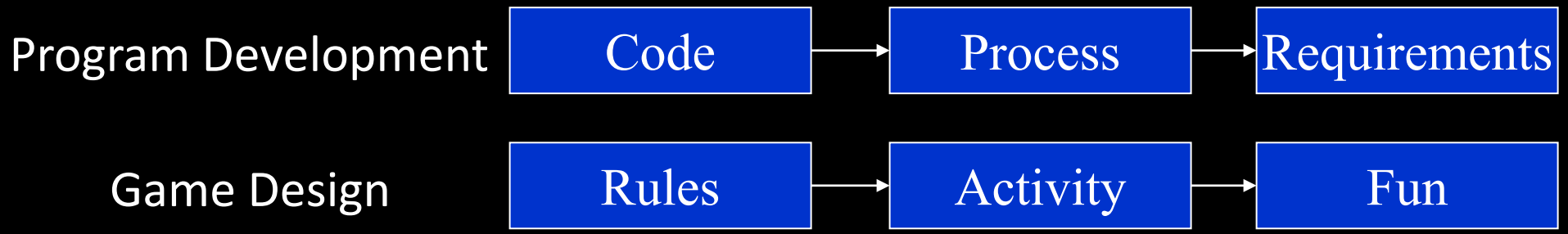

MDA: Mechanics, Dynamics & Aesthetics: The MDA Framework

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- Mechanics: The rules and concepts that formally specify the game-as-system.

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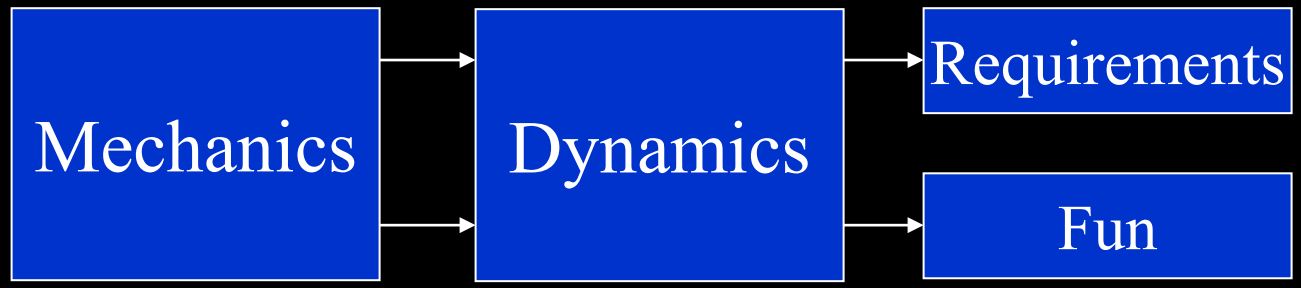

- Mechanics: The rules and concepts that formally specify the game-as-system.
- Dynamics: The run-time behavior of the game-as-system.

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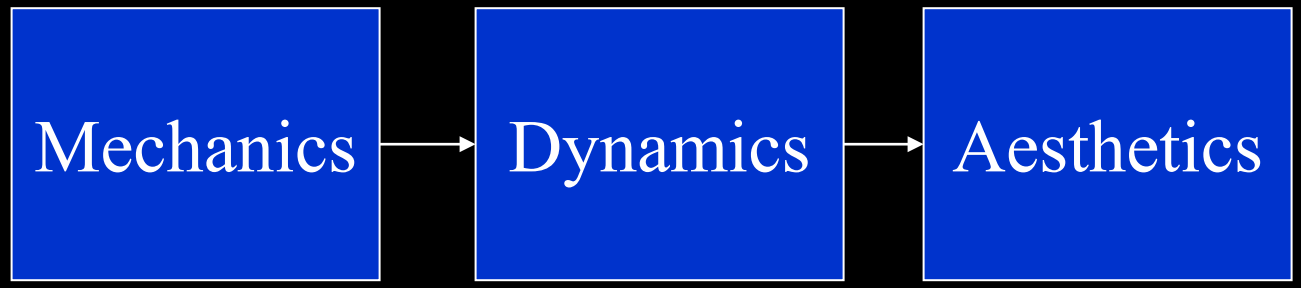

- Mechanics: The rules and concepts that formally specify the game-as-system.
- Dynamics: The run-time behavior of the game-as-system.
- Aesthetics: The *desirable emotional responses* evoked by the game dynamics.

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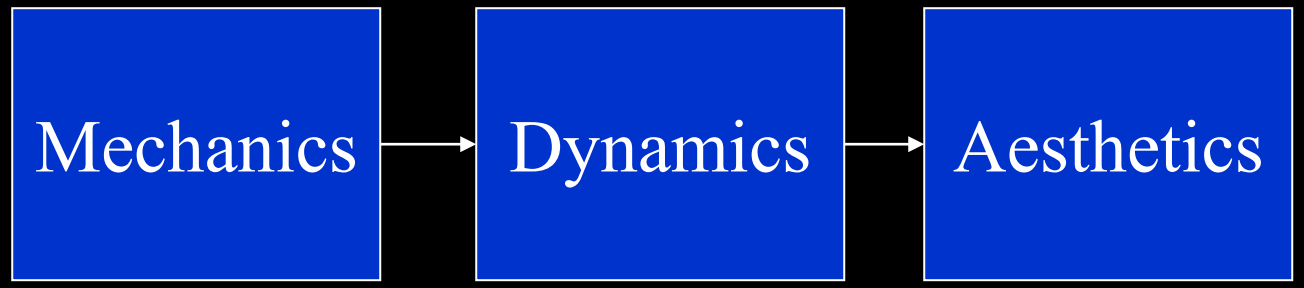

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These elements are the building blocks for Formal Models

- There is no unified Grand Unified Theory, just many small model (“Lenses”)
- Lenses can be formulas or abstractions
- New models are created constantly

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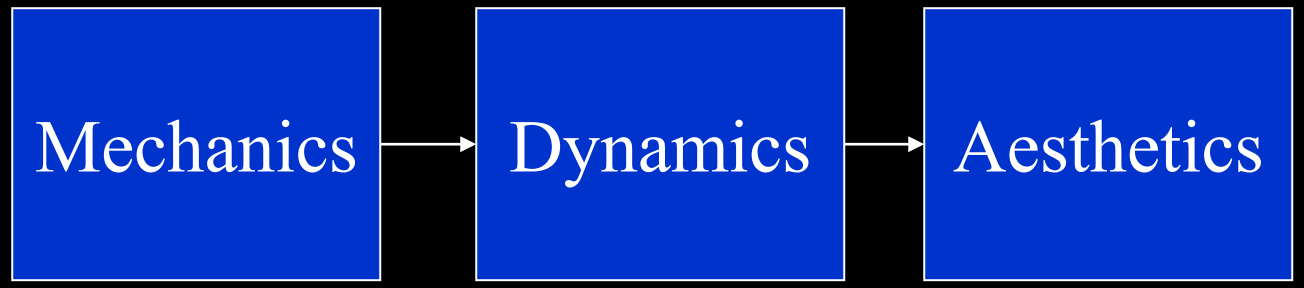

MDA is a "Taxonomy", a classification, for Models of Game Play

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

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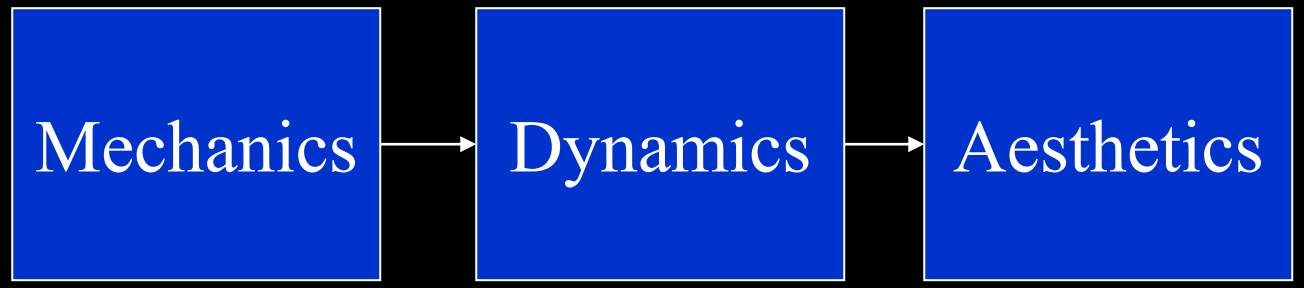

Properties of Good Models

- Formal (i.e. well-defined) – *Clear, concise*
- Abstract (i.e. widely applicable) – *Higher Level, therefore broader*
- Proven (i.e. known to work) – *Meets user expectations*

On any given game, we expect to use several different abstractions, not one big one.

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- The Designer's Perspective

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- The Designer's Perspective

- The Player's Perspective

Understanding Aesthetics

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?

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8 Kinds of Fun

1. Sensation: *Game as sense-pleasure*
   Games that evoke emotion in the player through sound, visuals, controller rumble or physical effort.
2. Fantasy: *Game as make-believe*
   Game as a mean to take the player to another world, some call it escapism.
3. Narrative: *Game as drama*
   Game as a mean to tell a story or narrative to the player.
4. Challenge: *Game as obstacle course*
   Games that provide the player(s) with highly competitive value or with increasingly difficult challenges.

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8 Kinds of Fun

5. Fellowship: *Game as social framework*

   Games that have social interactions as its core or as a big feature.

6. Discovery: *Game as uncharted territory*

   Games in which the player explores the world he/she finds himself/herself in.

7. Expression: *Game as self-discovery*

   Games that allow for self-expression from the player through gameplay.

8. Masochism: *Game as submission*

   Games that have "farming" or "grinding" as a core element

Clarifying the Aesthetics

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

- *Each game pursues multiple aesthetics.*
- *Again, there is no Game Unified Theory.*

Clarifying the Game Goals

- We can choose certain aesthetics as *goals* for our game design.
- We need more than a one-word definition of those goals.

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MDA uses an "Aesthetic Model"

- Use a rigorous definition to set an aesthetic goal.
- Serves as an "aesthetic compass."
- States criteria for success as well as possible modes of failure.

Examples…

Setting a Goal for *Competition*

Model: A game is *competitive* if:

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

Failure Modes:

- A player feels that he can't win.
- A player can't measure his progress.

Or….

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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.

Or…

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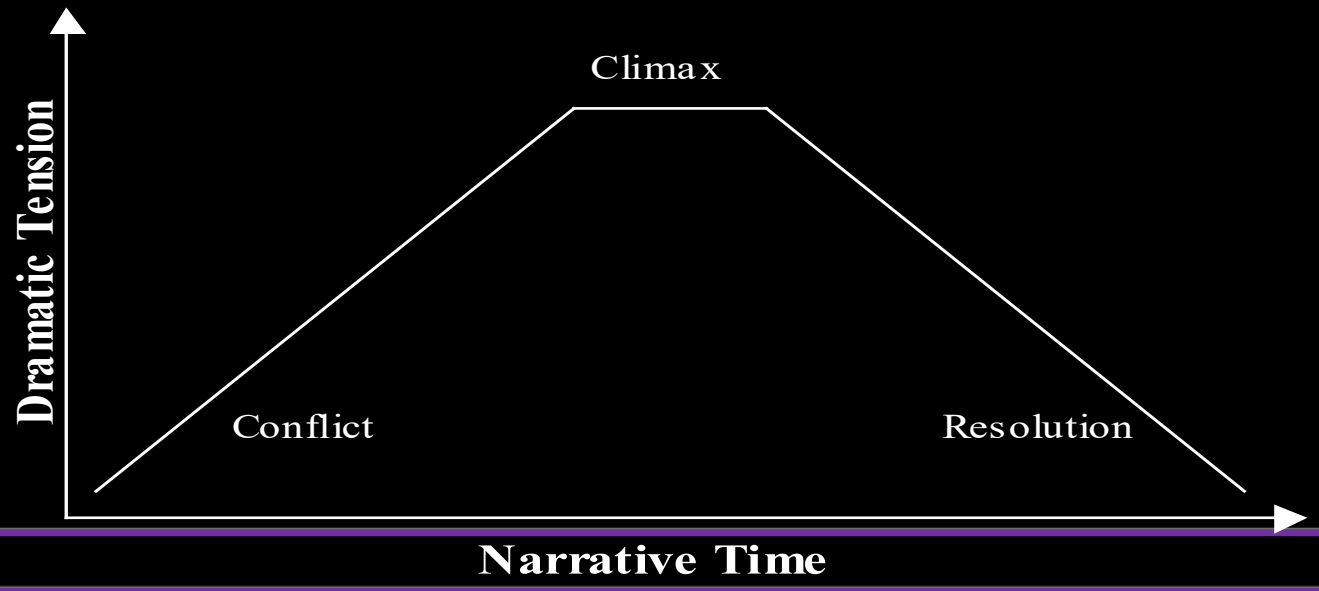
Goal: Drama

Model: A game is *dramatic* if:

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



Failure Modes:

- Lack of conflict.
- Lack of tension.
  - The conflict's outcome is obvious
    - *No uncertainty*
  - No sense of forward progress
    - *No inevitability*
- Tension doesn't increase to a climax.

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Mechanics vs. Dynamics

We need to acknowledge mechanics and dynamics as distinct concepts.

Dynamics *emerge* from Mechanics.

Interaction Models

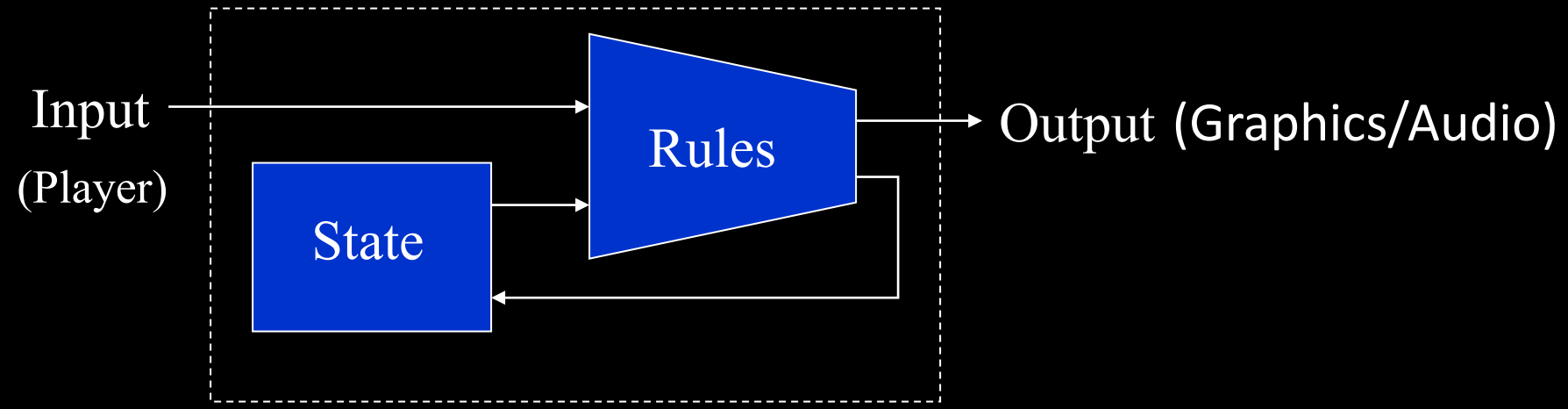
How do specific dynamics emerge from specific mechanics?

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
  - Pacing
  - Depleting resource

Formalizing Game Dynamics



The “State Machine” Model

Conclusion